

# American Forests and Forest Life



November, 1926

# The American Forestry Association

Washington, D. C.

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**A**DEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in co-operation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production or the protection of stream-flow; more extensive PLANTING OF TREES by individuals, companies, municipalities, states and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

Entered as second-class matter at the Post-office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918.  
Additional entry at Baltimore, Md., authorized July 23, 1925.

Member A. B. C.

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# AMERICAN FORESTS AND FOREST LIFE

The Magazine of The American Forestry Association

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Vol. 32

NOVEMBER, 1926

No. 395

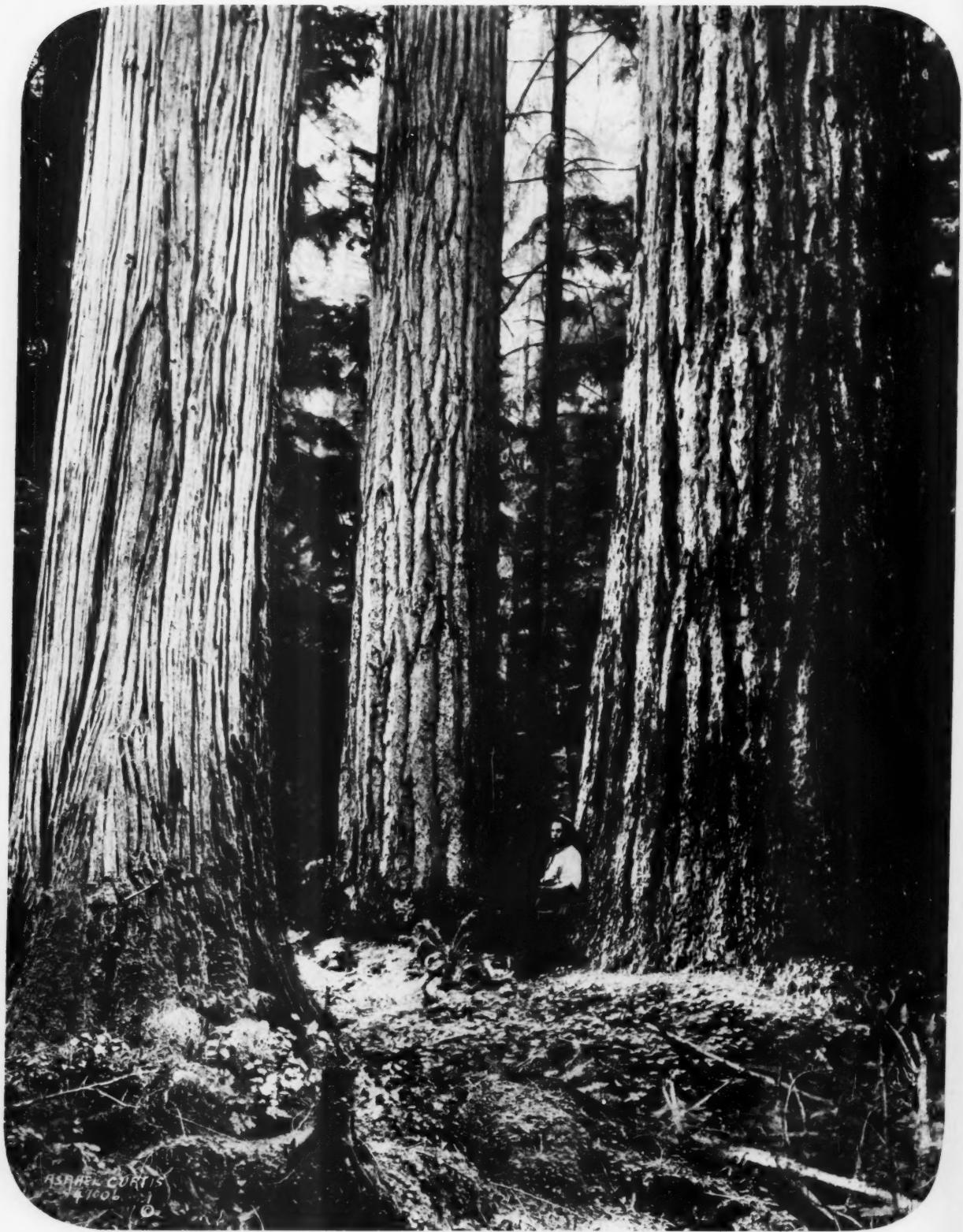
Published monthly—35 cents a copy—\$4.00 a year.

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### OUR "INDUSTRIAL" NUMBER

"Forestry begins with the ax of the lumberman"—and the mission of the trees is service. A broad understanding of conservation was never more necessary than it is now, when wood enters the life of the nation in a thousand different ways. Wise use and renewal—that is conservation. To enlist their continued cooperation in the protection and perpetuation of this base of supply is our urgent message to the great forest industries.



*Asahel Curtis*

**STORE-HOUSE OF THE NATION'S NEED FOR WOOD**

Here, in this mature forest of great trees, is found the answer to a great economic need of our people—wood for a thousand uses. Having reached the fullness of growth, it is ready for the harvesting.

# AMERICAN FORESTS

VOL. 32

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No. 395

## *A View of the Woods from Within*

By WILSON COMPTON

*Secretary, National Lumber Manufacturers Association.*

**E**DITORIALS and magazine articles now and then remind lumbermen that there are a number of well-meaning people at large who consider that timbermen, lumber, pulp and paper manufacturers and other woodsmen are a class apart, destroyers of the common heritage, wilful and gleeful violators of natural beauty, peculiarly possessed by a malignant form of commercial zeal which characterizes no other calling or industry.

It was not so in earlier times. Then, the lumbermen were hailed everywhere as the conquerors of the wilderness, the leaders of development, the founders of manufacture, the pioneers of commerce, the scouts of ready money. We find, running through the annals of the frontier, a common realization that the farmer and the lumberman were equal and inseparable partners in the conversion of the forest and the desert to the uses of mankind and the greatness of the Republic. So deep was this realization of the economic importance of the lumber industry to the housing, commerce and finance of an emerging nation that the public fiercely supported and defended such of the pioneer timbermen as were unduly shortsighted when it came to seeing the boundary lines of the timbered public domain. The people instinctively felt that the magnificent forests of the public domain were rightfully theirs and that their interests and those of

the industry that made them available were identical. The hardy settlers felt that the forests must support and reinforce them in their penetration of the prairies and the plains; and, on their part, the lumbermen realized clearly that whatever the impulsion of commercial enterprise, they were building empires as they

overthrew forests, were playing a noble part in the heroic national drama. They knew that they were the quartermasters of the vast and restless army of occupation that debouched from the timber lands to take over the lands in the great fertile valleys of the Middle West. Simultaneously with the conservation crusade and forestry drive that attained momentum, and also intolerance, in the first years of this century there began to crystallize the opposite conception of the woodsmen as "ruthless destroyers," "wanton despilers," "merciless devastators."

During the past quarter of a century, American lumbermen have been subjected to much public criticism because of destructive and wasteful methods of lumbering. Forest perpetuation is so obviously desirable from all standpoints that many people, not familiar with the problems which confront the timber owner and the lumber manufacturer, are at a loss to understand why the lumbermen have not embraced wholeheartedly and without hesitancy the practice of forestry. The brutal fact, declares Doctor Compton, is that forestry with the private land owner is fundamentally a matter of dollars and cents.

Lumbermen naturally have resented being referred to as "ruthless destroyers," "tree butchers," "high-handed timber barons," and so on. There are always two sides to every story, and in this article we are glad to give our readers a view of conservation from inside the lumber industry.

—EDITOR.

less destroyers," "wanton despilers," "merciless devastators." As Roosevelt said, every great forward movement has to have its "lunatic fringe." The conservation movement has had its share of the lunatic fringe. It was probably inevitable, for it seems as if the human heart demands something to hate as a requisite of ardor for an object of attachment. Being fervidly, passionately for conservation, the leaders of conservation had to have a diabolical enemy to hate. It is, by the way of illustration, a sordid fact of the recent war that it was a part of the training of the soldier to make him

hate the abstract enemy so fiercely that he had no repugnance to shoving a bayonet into the vitals of a human being on that side. So, the dervishes of the emotional meetings of the eruptive days of conservation found that the easiest way to arouse the worthy, reforming passion of the public was to paint for them devils to be destroyed. Thus the practical foresters became the "goats" of the academic foresters. Probably this stage of developing and changing public opinion regarding natural resources was both necessary and inevitable; but it was not a pleasant period for the goats who had hitherto held a respected and respectable place in the community, and it has left behind some absurd and harmful relics of half-baked ideas about forest use, and mementos of hate for the forest industries and the forest men.

I have no doubt that there are some excellent persons among the readers of this magazine who really believe that the forest industries are wilful devastators of the forests, and that the sylvan beauty of the western world is being sacrificed to the insensate greed of commercial vandals. On occasions there have been articles in its pages that reflected such a point of view. In the daily press it is not infrequent to find articles, even editorials, that voice a conviction that forest utilization is an evil thing itself. Many people seem to have come through the conservation hysteria with a hate complex for the entire group of forest industries. Mixed up with queer prejudices are the most absurd ideas of forest economics.

Some seem to think that ideal forestry is a matter entirely within the will and application of each and every forest owner; that it is entirely within his power to manage his forest on perpetual yield lines, rotate his cuttings, remove every stick and leaf of the slash, find an economical use for every grain of sawdust, park the woods when the axmen are through; run his sawmills without a trace of waste, turn out nothing but clear lumber, pay his men the highest of high wages,—and sell boards cheaper than ever. Some even think that there should be no commercial forests, that all, public and private, should be conducted, like the national parks, as perpetual virgin wildernesses. Taxes, the fire risk, windfalls, operating costs, financing charges, the grim laws of the markets, floods, and all the hazards of manufacture and trade, mean nothing to others who want their lumber but insist that it must come to them through sanctified processes.

Now, the fact, perhaps a brutal one, is that forestry, with the private land owner, is fundamentally a matter of dollars and cents. He cannot do anything with his land that is beyond his resources or contrary to commercial survival. The lumberman is a land owner who has acquired land because of its native stand of timber. A mature forest is as much a natural deposit as a copper mine. It is there to be used, not preserved. Even nature will not preserve it, for every ripe tree

is doomed to dissolution; and every forest in America stands on the bones of its ancestors. There can be no forest management, no forestry, no important tree growing so long as the earth is cumbered with forests in maturity and senescence. The producing forest is the growing forest. As Fernow said long ago, "the ax of the lumberman is the beginning of forestry."

Yet every season produces a new crop of writers who moan and mourn because they find stumps and slash where once were noble trees. They conjure up the trees that were, but they have no imagination for the thousands of uses to which they have been turned. Houses, industries, payrolls and provision of an abundance of material for the uses of mankind, they cannot conjure up. Neither can they conceive that nature will shortly absorb the debris back into the duff and humus of the forest floor, thus fertilizing with the remnants of the old forest the new one that will surely rise if fires be repelled. It is the misfortune of the lumber industry that it is necessarily ingenuous. A logging operation, with all its wreckage, is conducted in the open air, and every passerby may see the "butchering" of the trees. Few persons descend into the bowels of the earth to gaze upon the unsightly excavations for minerals, and fewer still care to witness the horrors of the slaughter house. Few spectators set themselves up as judges of mining and meat packing, but the most casual observer is certain that any logging operation is replete with sheer and abominable waste.

Great physical waste there is. Thousands of feet of wood material frequently litter every acre after the fallers have passed. But what of it? Are we to deny people lumber because they refuse every grade of lumber that might be made from a branch or a top? Shall the lumberman leave the ripe forest to deteriorate and decay because no chemist has yet shown him how he can utilize all of the physical waste? Can the lumberman be compelled to take every fallen tree out of the forest, no matter what the loss?

I wonder if the critics of the lumbermen ever think of commercial competition? Do they know that the alternate and substitute materials for lumber are forcing their way into the markets so persistently and forcefully that lumber, with all its virtues, has to fight for every market and is losing so many that there is really an excess of lumber today, despite the depletion of the forests? Do they realize that lumber is the one great American industry, urban or rural, that has no tariff whatever to protect it? Do they know that American coniferous lumber has to meet free Canadian lumber, from across an imaginary line, in every great market of the United States? Thus, while every lumberman fondly believes that the economic position of the forests must ere long guarantee the business of regrowing them, he momentarily faces a bitter struggle for existence.

Some simple minded person may inquire what the



John D. Cress

## A LOG TRAIN IN THE CASCADE MOUNTAINS

The lumberman, too often condemned as a "wilful devastator of the forest" says the author, is really a co-partner of the farmer in the conversion of forest and desert to the uses of mankind. Because he must conduct his operations in the open air, because he must, for economic reasons, often leave much wood waste to litter the field after an operation, he is called by the unthoughtful a "butcher" of trees. Whereas, a great forester has said "the ax of the lumberman is the beginning of forestry" and a mature forest makes its greatest contribution to mankind when harvested. It is there to be used. By its very nature, it may not be preserved indefinitely.

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lumberman's business troubles have to do with reforestation, feeling that it would not be a bad thing for the woods if a few "forest destroyers" succumbed to bankruptcy. Taxes and interest go on whether the mills do or not. It is frequently the lesser evil to run camps and mills at a loss than to shut down. Then, lumbermen have a heart; their business is the nucleus of industrial functioning in thousands of communities. Shall they shut down their mills to tide over a slack period and disrupt whole communities? It is a pathetic thing to see, as you might, say, 400 years crash to death. But every ripe tree downed by the woodman's ax means cheaper and better homes and a thousand industrial cheapenings. A ripe tree cumbers the earth; a vast even aged forest delays forestry. There is no net growth in an ancient forest. There cannot be reforestation without deforestation. An unused ripe forest is an economic liability; fire, decay, taxes and interest devour it.

But, what about reforesting? will be asked. Why don't all lumbermen plant a tree every time they cut one?

Reforesting is a matter of business equally with deforesting. The latter has been until recent times the main problem in America. When deforesting doesn't pay, reforesting is obviously out of the question on private lands, insofar as it involves effort or expense. Nature is always afforesting, but the lumberman cannot always afford to help her. We are only a few years past the time when stumpage was worth only a few cents a thousand feet, and lumber manufacturing often had a hard time getting by at that, so strenuous was the competition. No sane manufacturer, in the red ink, or bobbing back and forth from red to black, could think of spending money to grow forests when he could buy them for a song.

The history of every nation that is practicing forestry today shows that it didn't begin to grow, as well as to cut, until it paid to do so. Forestry for the private owner is a simple sum in arithmetic. The socialists or the Utopians might be wiser; but, so far, ordinary human beings don't do much more than they have to. A wise tyrant with full power to act might have indicated the precise moment in our forest history when depletion could be balanced by the inauguration of reforestation. There being no such boss around,—and, if there had been, our American democracy would not have tolerated him,—we have had to leave the decision to supply and demand; and that well known partnership has been somewhat dilatory. So, we get our famous four cubic feet of forest products consumed for every one grown. That sounds bad but the heavy adverse ratio means, we hope, more power behind reforestation. It certainly will be if wood substitutes don't interfere with the limited balance of the S and D partnership. However, a recent survey indicates that hundreds of lumber, pulp and paper and other timber owners are becoming foresters as well as

deforesters. With native supplies of timber dwindling, the manufacturers begin to plan to grow them, since that will ultimately be the only way to procure them. Not all companies can afford to go into tree growing. For many, the turn of the tide has come too late. A mill with only five years of ripe timber before it can hardly suspend operations for forty years whilst a new crop of trees is coming up. The tree growing job then is manifestly the business of another business entity. But there is scarcely a great lumber company in America with thirty years' cut ahead of it that is not beginning to figure on an everlasting forest and a perpetual business, without migration.

There may be some years of wood scarcity, but, in the long run, the United States will have all the forests and all the forest products it wants or is entitled to,—and they are about the same. We have enough forest land to meet all requirements if such use of land is profitable,—and nature will see to it that we have a lot of timber whether men can or cannot afford to help her grow it.

I would not be understood as advocating a blind let-us-alone policy. The public,—the states and the nation,—have so many interests in an abundance of forests that forestry must be fostered with a view to backing nature with policy. Taxation must be studied and adapted, protection against forest fires must be had, wood utilization must be advanced, silviculture must be taught, forestry must be exemplified and woodsmen must be educated and kept in line with the times. Our state and national forests are indispensable both as sources of material and exemplars of forestry, and should be greatly extended.

We need a merger of the unattached friends of the forests and the utilizers of the forest. There is no real chasm between them. Every lover of the forest has practical needs of its products, and every industrialist of the woods is also a citizen, with all the citizen's love for and social interest in the forests. One group represents idealism, and the other practice; but the individuals that compose them are to be found in both. The members of The American Forestry Association stand, in general, for the forestry that is to come; the producers of forest products for the forestry that was and is because of practical limitations. We are in an era of change in which neither pure exploitation nor scientific forestry is the rule, nor desirable. Those who live by the forests and those who love them have no irrepressible conflict.

While the economic motivation is obviously fundamental in the creation of private forestry, it is not by any means all of the process. The tradition of exploitation of "inexhaustible" forests that grew up during the centuries of embarrassing superabundance must be countered with a new tradition of production, as well as of consumption. We need to build up an inspiring new business concept of tree-growing as a profession and an avocation. We need to impress the

# An Old Time Turkey Hunt

DURING my stay at Hartford, in Connecticut, I had the good fortune to kill a wild turkey. This exploit deserves to be transmitted to posterity, and I shall narrate it all the more complacently as I am the hero myself.

An old American farmer had invited me to come and have some shooting; he lived in the backwoods, promised me partridges, grey squirrels, wild turkeys, and told me to bring a friend or two with me if I pleased. Accordingly, one fine day in October, 1794, Mr. King and I set out, mounted on two hacks, with the hope of arriving towards the evening at the farm of Mr. Bulow, situate about five mortal leagues from Hartford, in Connecticut.

Mr. King was a sportsman of a peculiar kind. He was passionately fond of this exercise; but as soon as he had killed a piece of game, he looked upon himself as a murderer, making on the fate of the defunct moral reflections and elegiacs which, however, did not prevent him from beginning again.

Although the road was a mere track, we arrived there without accident, and we were received with that cordial and unobtrusive hospitality which is shown by acts; in a few seconds every one

Among British sportsmen the fame of our American Turkey as a game bird had become established at an early date. Yet the first allusion to this royal sport occurs not in English literature but in that treasure house of gustatory odds and ends "Physiologie du Gout" by Brillat-Savarin. The account as given here is taken from a translation by A. Lalauze and known as "A Handbook of Gastronomy," published in London. The edition has become very rare.

of us, men, horses, and dogs, were examined, caressed, and lodged, according to their respective requirements.

About two hours were spent in looking over the farm and its dependencies. I should willingly describe it all, but I prefer to show the reader the four buxom daughters of Mr. Bulow, for whom our arrival was a great event.

Their age was from sixteen to twenty; they were radiant with freshness and health, and they were altogether so simple, lithe, and easy, that the most ordinary action seemed to lend them a thousand charms.

Soon after returning from our walk, we sat down around a table abundantly supplied. There was a superb piece of corned beef, a stewed goose, and a magnificent leg of mutton, with vegetables of every description, and at each end of the table two large jugs of cider, of which I never tired drinking.

When we had proven to our host that we were genuine sportsmen, at least by our appetite, he occupied himself with the object of our journey; he indicated as best he could the places to find game, the landmarks that might guide us on our way back, and, above all, the farms where we might find something to refresh us.

During



"OUR LUCKY STAR BROUGHT US INTO THE MIDST OF A FLOCK OF WILD TURKEYS."

J. S. Ligon

this conversation, the ladies had made some excellent tea, of which we drank several cups; we were then shown to a double-bedded room, where exercise and fatigue gave us a sound sleep.

The next day we went shooting a little late, and having arrived at the end of the clearings made by Mr. Bulow, I found myself for the first time in a virgin forest, where the sound of the ax had never been heard.

I walked about with delight, observing the good and the ravages wrought by Time, the creator and destroyer, and I amused myself with following out all the phases of an oak's existence, from the moment when it springs out of the earth with two leaves, to that when nothing more remains of it than a long black line, which is the dust of its heart.

Mr. King scolded me for my absence of mind, and we commenced our sport. We killed at first some of those pretty little grey partridges that are so plump and so tender; we knocked over afterwards six or seven grey squirrels, which are thought of much in these parts; and finally, our lucky star brought us into the middle of a flock of turkeys.

They rose one after another at short intervals, flying noisily and rapidly, and screaming loudly. Mr. King fired on the first and ran after it. The others were out of shot; finally, the most lazy rose at ten paces from me. It passed through a break in the wood; I fired, and it fell dead.

A sportsman alone can conceive my extreme delight at such a good shot. I picked up the noble bird, and turned it over on every side for a quarter of an hour, when I heard Mr. King calling to me. I ran to him, and found that he had only called me to aid him in finding a turkey which he declared he had killed, and which nevertheless had disappeared.

I put my dog on the scent, but he led us into thickets so thick and thorny that a snake could hardly have penetrated them; it was therefore necessary to abandon the search, which put my comrade in a fit of bad temper that lasted till we returned.

The rest of our sport is scarcely worthy of record. On our way back we lost ourselves in these infinite woods, and ran great risk of passing the night there, had it not been for the silvery tones of Mr. Bulow's daughters, and the deep bass voice of their father, who had come to meet us, and aided us to get out of our difficulty.

The four sisters were fully equipped with fresh dresses, new sashes, pretty hats, and dainty boots, and it was evident that they had taken some pains on our account. I had, for my part, the intention of making myself agreeable to one of the young ladies, who took my arm as naturally as if she had been my wife.

On arriving at the farm, we found the supper served, but before attacking it we sat down for a few minutes before a blazing and cheerful fire which had been lighted for us, although the weather did not require

this precaution. We found it very comfortable, and were refreshed as if by enchantment.

This custom is undoubtedly derived from the Indians, who have always a fire in their wigwams. Perhaps it may be a tradition from St. Francis de Sales, who used to say that a fire is good during twelve months of the year; an opinion to which I do not subscribe.

We ate like starving men; an ample bowl of punch was brought to enable us to finish the evening, and the conversation of our host, who talked more ingeniously than on the previous evening, led us far into the night.

We spoke of the War of Independence, in which Mr. Bulow had served as a superior officer of M. de La Fayette, whose memory every day becomes dearer to the Americans, who always speak of him as "the Marquis"; of agriculture, which at that time was enriching the United States, and finally of my own dear France, which I loved all the more from being obliged to quit it.

During the intervals of conversation, Mr. Bulow would from time to time ask his eldest daughter, Maria, to give us a song. And she sang us without being pressed, and with a charming hesitation, the national air, "Yankee Doodle," the "Lament of Queen Mary," and one of Major André which are all very popular in that country. Maria had taken some lessons in singing, and in this solitary place was considered quite a "cantatrice;" but the great merit of her song was, above all, the quality of her voice, which was at the same time sweet, fresh, and unaffected.

Next day we went away, though urged to stay, but I could not, as I had also duties to fulfill in America. As they were getting the horses ready, Mr. Bulow took me aside, and said the following remarkable words:

"You behold in me, my dear sir, a happy man, if there is one on earth; everything you see around you, and what you have seen at my house, is produced on my farm. These stockings have been knitted by my daughters; my shoes and my clothes come from my herds; they, with my garden and my farmyard, supply me with plain and substantial food. The greatest praise of our government is that in Connecticut there are thousands of farmers quite as content as myself, and whose doors, like mine, are never locked.

"Taxes here scarcely amount to anything, and, as long as they are paid, we can sleep calmly. Congress favors in every possible way our rising industry; agents from every quarter are always ready to rid us of all that we have to sell; and I have ready money in hand for a long time, having just sold at twenty-four dollars the barrel of flour for which I usually get but eight.

"All this is due to the liberty we have won by arms and established on good laws. I am master in my own

# New York— Port of Fancy Hardwoods

By E. C. M. RICHARDS

*F*EW people would imagine New York city an important sawmill town with mills producing millions of feet of lumber annually. Yet there, if one knows where to go to hear them, the hum of the saw and the hiss of the knife cutting mahogany, satinwood, Circassian walnut, and others of the world's choicest woods into lumber and veneer, can be heard daily. Woods used for dyeing purposes can be found there; woods used for toolhandles, small implements, and novelties, until the investigator is surprised with the extent of the fancy hardwood industry.

But the results of this important industry are still more noticeable, for fancy woods hold no small place in the everyday life of the people of the United States. A variety of uses of cabinet woods come under our eyes every day: musical instruments, cigar boxes, canes and umbrellas, tool handles, interior trim, motorboats, Pullman car interiors, furniture, hairbrushes, boxes for scientific instruments, surveying instruments, sporting goods and an endless host of souvenirs. It may be interesting to learn a little more about these woods that are at once so useful, so beautiful and which come, often, from so far away.

First of all comes the wood that everyone has seen in cigar boxes, the wood with the pleasant smell and easy workable qualities. Into New York harbor is brought each year between fifteen and twenty million feet (3/16 inches thick) of this Mexican Cedar from Mexico and



*Courtesy Pan American Union*

#### A GIANT CEDAR TREE IN GUATEMALA

Easy to handle, making beautiful veneer, this with mahogany is the most useful and common of our imported fancy woods, and into New York harbor each year is brought many million feet for manufacture and distribution to the trade.



EBONY

The large round logs in the center are ebony, used for piano keys and the finest cabinet work. Though the wood is quite brittle, these logs have stood transportation well. Note that the whole round log is used.



COCOBOLO

Though these cocobolo sticks are small, crooked and irregular this will not interfere with their usefulness for they are largely used for tool handles and other small articles.

QUEBRACHO  
Courtesy Pan American Union

In Paraguay the cars bring in the lumber for trans-shipment by train and boat to Buenos Aires.

Central America. Easy to handle, capable of being cut into veneer 1/120 of one inch thick, and with a pleasant odor and appearance, this is, with mahogany, the most useful and common of our imported fancy woods. When next you watch the Intercollegiate boat race at Poughkeepsie, remember that the light shells are made of this wood. The pleasant smell of this Mexican Cedar makes it especially valuable for cigar boxes because it adds to the odor of the tobacco its own fragrance.

Mahogany comes from the species known botanically as *Swietenia Mahagoni*, and is found in the West Indian Islands and through Tropical Mexico, Central America and Peru, and on Key Largo and Elliotts Key, Florida. It has been nearly exterminated on the West Indian Islands and Florida. The value of this tree for interior trim and furniture began to be appreciated about 1724, and the demand has become so great and has increased so much that today the total amount cut only satisfies about one-half the demand. The remainder is made up of "near-mahoganies" of woods of some twenty species of trees, and of still other species cleverly stained in imitation. These twenty "near-mahoganies" come from Cuba, Mexico, Santo Domingo, Central America and even from the far away Philippine Islands. Placed side by side, these near-mahoganies can often be readily distinguished from the true wood. For instance the Philippine wood is much coarser and softer. Of the real mahogany some five million feet is imported into New York every year, and is used for interior trim, furniture, boxes for scientific instruments, high grade pleasure boats, office and store furnishings, showcases and other uses where a strong, unwarping, handsome wood is required.

A close second to mahogany in value and general usefulness comes Circassian walnut. This is the wood of the English walnut tree, but comes originally from the Caucasus, Persia, India, Turkey and Southeastern Europe. It was used long, before the discovery of America, in Europe for furniture and interior trim and was imported into Europe from the Near East very early.

Verro, who was born 116 B. C., writes of its being in Italy during his lifetime. This wood is valued especially for its choice figure so that the short, ill-formed, twisted trees, which give this peculiar figure, are most sought after. As all of the trees of this species grow scattered through the forest, and as the twisted, fancy-grained specimens are only occasionally found among them, the difficulty of logging and consequently the expense are correspondingly high. Since the wood when green will sink in water the logs must be dragged overland to market, so the reason for the high cost of Circassian walnut may be understood. Single trees with particularly choice grain have been sold for thousands of dollars.

Before the war about 2,500 tons of Circassian Walnut entered New York annually to be used largely in the most expensive furniture and interior trimming work, mostly in veneer.

The expression "tickle the ivories" has informed many people of the material used to make the white keys of pianos, but how many know that the black keys are made of ebony? This dark wood from a dark land comes all the way from the Congo, from Java and, the best ebony of all, from that little known country, Madagascar. Some 1,500 tons of this beautiful and useful wood come through the Narrows into New York harbor annually.

The two extremes of hardness and softness, of heaviness and lightness in the world of woods both enter New York from the same general region. Two to three thousand tons of lignum vitae, the heavy, hard wood, and two thousand tons of balsawood, both come from the Caribbean, the lignum vitae from Cuba, Jamaica, Haiti and (the best of it) from Santo Domingo; the balsa from Panama and the United States of Colombia. Lignum vitae is so heavy that it will sink in water when dry, and is used for bowling balls, mallet heads, pulley wheels, and other uses where extreme hardness is required. Balsa on the other hand, is lighter than cork, and through it an ordinary match can be driven like a nail. It is used to fill life preservers and as the insulating material in refrigerators.

A wood that comes to us in quanti-



A MIXED CARGO

The hardwoods are imported in the holds of steamers but are often carried from place to place about New York harbor on barges. This barge is loaded with small cocobola and lignum vitae logs.



LIGNUM VITAE

This is perhaps the heaviest wood known, being heavier than water. It has a peculiar odor, often associated with bowling alleys because good balls are largely made of this wood.



MAHOGANY

Most mahogany comes in the form of squared logs, hewed roughly in the woods where it is cut. This makes the log lighter to handle, and saves space and freight charges.

ties of from seven hundred thousand feet to one million feet is the famous teak. This timber grows in South Central Asia, most of it being imported into New York from the romantic country of Burma, the land that is "somewhere east of Suez." Of a very pale green tinge teak has a distinctive odor and a slightly greasy feel to the fingers like our own cypress wood. It is a very valuable material for ship building and is not attacked by the teredo.

Perhaps the choicest wood of all for fancy interior trimming and similar work is satinwood. This lovely glossy wood is now brought from Santo Domingo and Ceylon. Formerly it came from Porto Rico but it has been practically cut out on that island. Some three to four hundred tons is the normal annual import into New York. Satinwood is another species of wood whose supply has been seriously diminished and if we are to continue to have it at all in the future some restriction should be put upon cutting it now.

Back in Old England on some of the old country estates the great ancestral oaks have to be cut out now and then for one reason or another. These fine old trees often contain very valuable fancy oak lumber and are sold at fabulous prices to fancy hardwood buyers. This lumber is used sometimes in trimming some of the finest Pullman cars, and normally about fifty thousand feet finds its way into New York annually.

From that little known, little visited region of the Amazon River valley, comes the beautiful snakewood which attracts our attention in the window of the umbrella-and-cane store because of the red stripes running in rings around the handles. Fifty to seventy-five tons of this wood are imported annually to New York, mostly in the form of small to medium sized logs and practically all of it goes into canes and umbrella handles.

Another wood that comes to us from Brazil is rose-wood. A good deal of it also comes from India. This wood goes into the finest pianos, musical instruments and furniture and about one thousand tons of it is imported at New York annually.

Those varieties of fancy woods make up the bulk of imports but there are a number of others such as green-heart, the wood used in building the locks of the Panama Canal and also used for fishing rods. Amaranthe, the purple Cuban inlay wood; Camogon, the yellow and black wood from the Philippines, and the extract dye and stick woods like quebracho, fustic, logwood and cocobolo. All of these help to swell the total until the normal imports expressed in dollars lie between ten and fifteen millions, a surprising sum considering how little is known of the trade by the general public.

One of the interesting things about the fancy hardwood trade is the fact that there are so many kinds of woods still not used in the market. Not infrequently a man with a suitcase full of samples of woods most of which nobody ever heard of will call in at the office of one of the big importing firms and try to start something new in the way of a fancy wood on the New York market. The difficulty with most of these new varieties is either that they are not especially choice or that they are really an inferior substitute to one of the regular varieties, or they are so hard to get and so hard to introduce into the market that at present they have to wait. Once in a while, however, these woods introduce an element of humor into the business. For instance one very attractive wood was brought to a large firm from South America. It seemed to be a "find" and was introduced with considerable success. But when it came to handling the wood in the mill the workmen found that the least splinter getting into their hands caused severe poisoning. Great care was taken therefore in handling this wood and considerable success seemed to attend its sale. One day the new wood was being cut into veneer and two men were detailed to carry the piles of veneer away to the drying room from the machine. These two men would wait until a fair sized pile had accumulated and then would take opposite ends and lifting it high in the air walk off, resting the veneer on the top of their heads. That night the men washed up and as soon as their hair



*Courtesy Pan American Union*

A FINE SPECIMEN OF GUATEMALAN MAHOGANY  
There is only one true mahogany, known botanically as *Swietenia mahogani*, and the demand for it is so much greater than the supply that there are twenty "near" mahoganies—woods which stain to cleverly imitate it—on the market today.

ble success. But when it came to handling the wood in the mill the workmen found that the least splinter getting into their hands caused severe poisoning. Great care was taken therefore in handling this wood and considerable success seemed to attend its sale. One day the new wood was being cut into veneer and two men were detailed to carry the piles of veneer away to the drying room from the machine. These two men would wait until a fair sized pile had accumulated and then would take opposite ends and lifting it high in the air walk off, resting the veneer on the top of their heads. That night the men washed up and as soon as their hair



FUSTIC

This valuable dyewood usually comes in very irregular pieces, like cocobola. Fustic furnished the dyestuffs for our doughboys' uniforms.

woods end of this world wide trade. How is the logging carried on? What power is used in handling the logs? What are some of the problems attached to getting out this kind of timber? For the most part the logging is of the most primitive kind. Local natives are usually the woods workers. Generally these natives work entirely on their own responsibility, going into the woods, locating the special trees, felling them, hewing them square if needs be, skidding them out to some stream or road and selling the logs to the buyer of the New York company. With such a system it is easy to see that much loss is experienced all along the line. Wrong trees are chosen, the logs often cut up badly, and if they are driven down a stream there is probably an additional loss. Too high stumps, and too large tops left in the woods, of course, go along with such a lack of system. Usually oxen or buffalos are used in skidding although there are two marked exceptions to this rule. In Africa when logs are ready to be skidded a rope is attached to one end and fifty or a hundred negroes take hold and snake it through everything.

Logging in the dense, dripping forest of the Congo is a picture not easily forgotten. Down a rough trail comes a gang of naked black men, shining with perspiration, smeared with mud, and shouting and crying out to each other as they pull on the rope. They stop for a rest. A minute when all is quiet as

came in contact with water it turned a bright flaming red and notwithstanding proved effective in removing the dye. The poor fellows had to wait until it grew out. Manufacturers find that in introducing new varieties of fancy woods it takes a great deal of pushing and advertisement to successfully put a new wood on the market.

It is worth while to glance at the Andaman Islands out in the Indian Ocean, hundreds of miles from the mainland. The wood was valuable and it was decided that it should be cut and brought into New York city. But it was necessary to get draught animals to log with. India seemed the place to get the needed animals and so the company went there, through a representa-

they catch their breath, and then the wag of the crowd gets off of "good one" and the sombre forest rings with negro laughter and white teeth flash behind the thick lips. Then the word is given to get ready and with a grunt and a straining of the black bodies, these loggers of the Gold Coast start our chair lumber on its way to us once more.

Out in India the logs are handled by elephants. Through piles of black, mud-smeared timber, the great black animals move each with a half-naked mahout astride its neck, white turban showing bright and clean above the blackness of the mud, the logs, the shiny skin of the man and the rough hide of the elephant. And over all the bright, turquoise sky and the brazen, burning sun. And those logs are the satinwood and rosewood that will decorate the finest buildings in America! How dependent men are upon each other in this world of ours!

But speaking of elephants. One of the fancy hardwood concerns of New York city discovered that



TEAK

A very valuable wood and one with wonderful lasting qualities. It is used in shipbuilding a great deal as it is impervious to the attack of the teredo or marine borers.

a representative, and bought a whole herd of elephants. The next thing was to get the beasts on the job and this was done by chartering a steamer and hoisting the elephant herd one at a time from the shore up on the steamer by means

of a heavy band under the animal's belly and a donkey engine.

The voyage to the Andamans safely made, a new difficulty arose. There was no landing place for the elephants, nor any large lighters to transfer them from the steamer to the shore. Quite a job for a logging boss to handle! A steamer full of elephants and no way of unloading them! But this boss knew his business and he solved this problem by hoisting the elephants up out of the steamer, swinging them over the side and dropping them one by one into the ocean, whereupon they swam safely ashore and were taken in hand by their mahouts. And this logging job proved very successful, as anyone can see the next time they go into the Hudson Terminal Building or the Chemical National Bank in New York city, for these buildings are trimmed with this same vermilion wood from those far away islands in the Indian Ocean.

There is one point that should be emphasized in speaking of the fancy hardwood industry, and that is the need for a thoughtful look ahead. Under the present system, our supply of fancy timber comes to us from most irregular sources, where for the most part little or nothing is known of forestry or conservation. The world is limited in size and it is rapidly growing smaller, because of improvements in transportation and communication and unless some care is taken to see that there is adequate reproduction in these tropical forests the supply will ultimately be destroyed. Fortunately, in India and Burma scientific forestry is being practiced and in this country interest in tropical forestry is increasing. Already in the Philippines a splendid start has been made. But let us remember that the forests of the hot countries are no more inexhaustible than forests of the United States, lest when it is too late we wake up to find our finest fancy woods a thing of the past.

## What Will We Do for Pencils?

By R. K. HELPHENSTINE, JR.

PENCIL manufacturers all over the world have for years been dependent upon our native eastern red cedar (*Juniperus virginiana*) for their supplies of raw material. A recent consular report from Paris, France, states, however, that prices of first quality American pencil cedar are rapidly becoming prohibitive, and that if conditions do not soon improve a substitute wood will have to be found. The wood of the Pacific Coast sequoias has been tried, but apparently with little success. In France pencils are to a certain extent already being made from basswood and alder, which after being dried is specially treated. It is reported that although the quality of such pencils can not compare with pencils made from even second grade American cedar, a fairly satisfactory pencil is produced at an immense saving in cost. Basswood and alder can be obtained in France at approximately \$12 per ton, and after treatment would cost about \$16. The finished pencil is sold for 10 or 12 francs per gross. American cedar, on the other hand, now costs \$115.00 or more a ton, and the finished pencils bring 48, 50 and 60 francs per gross according to quality.

Although there are no official figures available on the subject, it is estimated that the annual consumption in France alone of American pencil cedar is about 1,000

tons, which is shipped both in the form of logs and slats.

In connection with future supplies of pencil material it is reported that England is making considerable progress in developing the cedar forests on the slopes of Kilimanjaro in Kenya Colony, Africa. Sawmills have been built, and although much is yet to be accomplished before quantity production starts, considerable shipments of Kenya cedar have already been made. Pencils of this wood are now being successfully marketed in France. The price of Kenya cedar (*Juniperus procera*) is half the cost of American cedar and apparently there is but little difference in the finished pencils, which sell at about half the cost of pencils made of raw material imported from the United States.

One large French pencil manufacturer predicts that in ten years England will not only have ceased buying cedar from the United States but will become the main source of supply for pencil wood for all Europe.

The supply of a number of our specialty woods such as red cedar, dogwood and persimmon seems to be growing mighty low. Can we compete with British East Africa in growing pencil cedar, or when our original supply is gone must we turn to the "ever-sharp" variety or buy them of England?

### The Annual Meeting

At New Haven, Connecticut, on January 28 and 29, 1927, the members of The American Forestry Association will gather for the Annual Meeting of that organization. The Connecticut Forestry Association, which is acting as host to the national body, is arranging an official state and municipal reception for the visitors from every state in the Union and from Canada. A distinguished attendance is expected and the plan is to popularize the sessions of the convention to bring the vital questions with which the Association is concerned directly before the people, eliminating technical papers and discussion of interest only to scientists, as the directors of the Association feel the necessity of closer cooperation on the part of the public in its program.

Further details will be announced in a later number of the magazine.



*Photographs by the United States Forest Service*

FORESTS are under constant attack. Agents of destruction are taking daily toll through the bold onslaughts of fire, tireless jaws of insects, the stealthy, unseen invasion of fungi, and other hostile factors. Not content to depend on their land forces alone many enemies of the forest attack also from the sea. In unnumbered myriads and in a variety of shapes and sizes these naval enemies press the battle day and night. From Ketchikan to Cape Town, from Copenhagen to Guam, everywhere in salt water, wood is subject to destruction by those pests of the sea, the marine borers. Their attack is more rapid in some harbors than in others, and the warm waters of the tropics are most favorable for their development. But even the cold waters of the northern seas are not free from them and man must protect his wooden sea structures in every salt water harbor if he would have long service.

Of the several distinct groups of marine borers the most rapidly destructive is the *Teredo* or ship-

worm. The adult *Teredo* is a worm-like animal with a head encased in a double shell with sharp cutting edges and a tail fitted with hard protective devices. The long body is filled with a gelatinous fluid and is very tender and easily injured. The size of its body depends upon its species and the competition for food. With plenty of food and room for growing some species of *Teredo* may become an inch or more in diameter and more than six feet long, but when competing with thousands of others for shelter and food the body may be only a few inches in length and an eighth to a quarter of an inch in diameter.

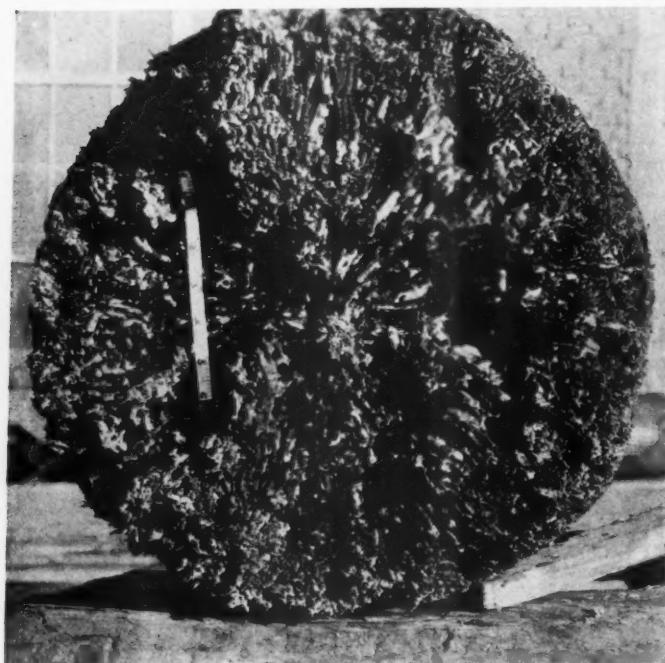
Akin to the *Teredo* is the group of borers classified under the name *Bankia* or *Xylotrya*. Some of these grow even larger than the *Teredo*.

To the scientist the many species of *Teredo* and *Bankia* show distinct differences in form and habits but to the untrained layman they look very much alike and for general reference they may all be grouped together and called shipworms.



A SMALL BUT POWERFUL MARINE ENEMY  
OF THE FOREST

*Bankia*, a member of the shipworm group. It attacks by boring, and just a few could do little harm but when they swarm by millions, they gradually weaken and eventually destroy the wood in piling, wharves and other marine structures.



THE WORK OF TEREDO NAVALIS

This 16-inch Douglas fir pile was completely penetrated and destroyed after having been in service only fourteen months.

In the weakness of the shipworm's body lies his destructiveness, for he is compelled to bore into wood for shelter. In the early stage of development it is a free swimming organism of microscopic size and its shell encloses the whole body. Finding a suitable piece of wood the shipworm attaches to it and begins boring. As it bores into the wood its form rapidly changes. As the burrow extends the body grows lengthwise and also increases in diameter so that soon the body is very much larger than the opening through which it entered and the shipworm is a life prisoner in a cell of its own making. As the body grows the shell stays with the head portion and does the boring. The rest of the body has no shell attached to it, but as a substitute the burrow is lined with a shell-like coating throughout. Two flexible tubes called siphons extend into the water, one for discharging the wood borings and one for drawing in a constant stream of water. At the sign of danger these siphons are drawn in and the hard parts of the tail used to block the entrance of the burrow. The principal food supply has been supposed to consist of minute marine organisms obtained from the circulating water but there is recent evidence that shipworms can live a long time on the wood alone.

A few shipworms in the piling of a wharf or pier would do no harm but when they enter by the million trouble begins. Then they grow so thickly that there is scarcely any wood left

between their burrows and in a short time the piling may be so damaged that it cannot support the structure. In extreme cases piling has been destroyed in much less than a year. In San Francisco Bay a 6-inch by 8-inch Douglas fir timber was cut off by *Teredos* in four months from the time they began their attack.

A group of borers entirely different from the shipworms includes the *Limnoria*, *Chelura* and *Sphaeroma*, all of which are crustaceans, as are lobsters and crabs. Of these, the *Limnoria* are most plentiful and most destructive. These borers are free to swim or crawl about and change their abode if they desire. The *Limnoria* and *Chelura* are only about  $\frac{1}{8}$  to  $\frac{1}{4}$  of an inch long but they make up in numbers what they lack in size. They work in a similar manner and oftentimes side by side, boring their burrows into the wood, choosing the softer spots if they have a choice but taking it all when necessary. When they attack in great numbers the wooden walls of their burrows are so thin that the waves break them down, and by this process of boring and washing away, even the largest pile can be destroyed in a few years. In waters where both shipworms and *Limnoria* are active the *Limnoria* frequently

eat shipworms out of house and home, by destroying the wood around the shipworm's burrows and exposing their delicate bodies to the first enemy that comes along. Destruction by *Limnoria* is usually most rapid at about low tide level, growing less above and below this point. For this reason piling so attacked assumes an hour-glass shape.



INTO THE DISCARD

This fine mahogany log at Pensacola, Florida, was ruined and made worthless by shipworms. The holes of the shipworms are shown in the part chopped away. The white spots on the surface of the log are barnacles which are harmless to the wood.

*Sphaeroma* are similar in shape but much larger than *Limnoria*. Fortunately they are not so plentiful and do not work so rapidly. They resemble very much the common "sow bug" which is found in damp basements or under boards lying on the ground. When taken from the water and put into a preservative solution or allowed to die in the air the *Sphaeroma* has a peculiar habit of rolling himself into a tight ball. Although usually found only in salt water this borer is known in Florida to live in the fresh water of the St. Johns River.

Another interesting group of wood borers are the *Martesia*. These are clam-like animals with their bodies completely enclosed in a bivalve shell. Like the shipworms, they enter the wood when quite small and then grow larger after they get inside. They do not generally exceed  $2\frac{1}{2}$  inches in length or an inch in diameter. They are not as destructive in general as the shipworms or *Limnoria* but in some parts of the world they are a serious pest. There are several species of *Martesia* and many species of allied borers of generally similar character. Some of these bore in rock or concrete with the greatest ease and occasionally marine structures of these materials have been damaged by them.



A VICTORY FOR THE MARINE BORER

A warehouse at Crockett, California, which collapsed due to the destruction of the piling beneath which supported it.

Although damage done by marine borers each year amounts to millions of dollars usually it is not of a sensational character. There are many cases on record, however, where the results have been startling. The northern part of San Francisco Bay is ordinarily not very salty because of the great quantities of fresh water discharged into it and it has therefore been practically free from marine borers. This area is highly developed industrially and has many piers and other harbor structures of wood. In 1917, through low rainfall in previous years the water became more salty and the borers came in and began their work. By 1920 their attack was epidemic in character. Practically all of the piling in this region was unprotected and much of it had served successfully in this condition for many years, but when the *Teredos* found it things began to happen. One half of the great railroad ferry slip at Benicia toppled over one day and floated away. The wooden hulls of the car ferries that carry the Southern Pacific trains across Carquinez Straits were found to be dan-



A DIFFERENT VARIETY OF MARINE BORER

This is *Limnoria*—tiny crustaceans, as opposed to the wormlike form of the *Teredo* and *Bankia*. Only about  $\frac{1}{8}$  to  $\frac{1}{4}$  of an inch long, they make up in numbers what they lack in size. These aggressive little fellows are so voracious that they frequently even eat the shipworms out of house and home!

gerously attacked and repairs costing over half a million dollars were necessary. At Oleum, a railroad trestle gave way suddenly, throwing several loaded freight cars into the water. Within a short time many costly structures were ruined or severely damaged, and by 1921 it was estimated that the teredo had caused 15 million dollars damage in this region.

One of the strangest cases reported during this epidemic was the destruction of the wood stave pipe and wooden water tanks of one of the industrial plants near the bay. This plant pumped its cooling water from the bay, and in this way the borers got into the water circulating system and ruined the pipe and tanks before their presence was announced by leaks. They were working at an appreciable elevation above the level of the bay and the water in the tanks was said to be quite warm.

Some species of wood are more resistant to marine borers than others. The most important piling timbers of the United States are southern pine and Douglas fir, both of which succumb quickly unless protected. Sawmills on the Pacific Coast which have salt water log ponds suffer considerable damage to their logs if they are left very long in the water. Mahogany logs in Africa and in Central America are sometimes seriously damaged while stored in the water awaiting shipment.

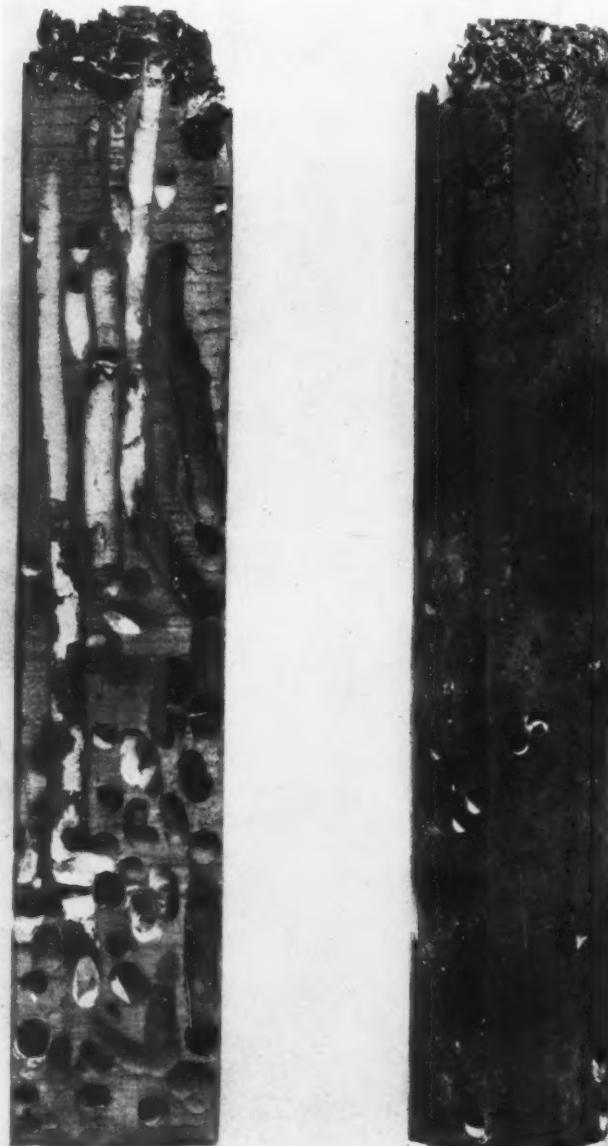
The submerged woodwork of the Panama Canal lock gates was made of greenheart, a South Ameri-

can wood reputed to be very resistant to borers. It was not destroyed immediately but was very seriously damaged in a few years. Palms and palmettos have been found quite resistant to borers but they are not

of suitable size for heavy construction and they decay readily above the water so they are not very generally useful. Mangrove, jarrah, turpentine wood, totara, manbarklak, and angelique, all foreign woods, are a few of the most resistant species of the world but their durability varies in different places and none of them are entirely immune from attack. Their resistance, like that of greenheart, is supposed to be due to natural chemical poisons, except in the last two species, which contain a relatively high percentage of silica or "sand." The resistance of the palms is attributed to their fibrous character. None of these woods are obtainable plentifully and cheaply in this country, so they can only be depended upon to supply the need for piling in exceptional cases. We must depend almost entirely on our native pines and firs and provide them with artificial protection.

The battle against the borers has been going on ever since man began to go to sea. The Roman galleys were severely

damaged by them and various protective devices were used. The Romans appear to have originated the idea of "scupper nailing," or driving large headed nails into the wood close together all over its surface. The scheme is still used occasionally but is only partially



WHAT THE BORERS DID TO THE PLUG

An experiment tried to combat the borers was the boring of a  $1\frac{1}{2}$ -inch hole lengthwise in a stick of wood to its center. This was filled with dry, poisonous powder like corrosive sublimate, and the hole plugged up,—the idea being that the water would distribute the poison through the wood and so protect it against attack. But the borers had other ideas and destroyed the plug, as shown above, before the water had time to do its work!

(Continued on Page 682)

# The Western Myrtle

By MEL WHARTON

"Instead of the thorn shall come up the fir tree  
And instead of the brier shall come up the myrtle tree."  
—Isaiah, 55:13.

**T**HIS, the first recorded reference to the myrtle tree is significant also inasmuch as it indicates that the myrtle tree was one of outstanding beauty and appreciated in the olden Bible days, even as it is today by western civilization.

But even the myrtles of Palestine, in comparison with their North American cousins, are scraggly,—retaining little of the vigor and size of the trees of the Pacific Northwest. It is not believed that the myrtle was used commercially in Europe, and to-day there is only one district here where the tree is so used,—a slender finger of land in western Oregon and Washington between the Cascades and the sea. In this favored locality, the handsome myrtle attains magnificent growth. Not a common species, yet it is found in sufficient numbers to form the nucleus for a small industry affording a handful of modest factories a means of livelihood.

Western myrtle thrives on a variety of soils, but requires rich soil with abundant moisture for its best growth. Distribution throughout the Pacific Northwest ranges from low river bottoms to high foothill slopes. It will grow on dry, gravelly and sandy soil but with less robustness. The tree is never found in pure stands but always mixed with such species as Douglas fir, red alder, western red cedar, hemlock, spruce, vine and broadleaf maples, manzanita and live oak.

In physical appearance the myrtle varies extremely.

When grown in the shade, densely crowded by other species, the tree is slender and tall. But when found in the open where the struggle for sunlight is not so strenuous, the myrtle broadens, much like the maple, often becoming so densely foliated as to check the penetration of sun rays.

Myrtles are frequently found with such perfect contours that it seems as though some giant had swept through the grove and trimmed the tops with his mammoth shears. The smaller, nursery type of myrtle lends itself admirably to shaping and for this reason is a popular garden tree, becoming then more of a shrub than a tree. And to those who have seen the stately myrtle in the wild grove, it is easy to understand why the ancients classified the tree as one of the most beautiful of all growing things.

The leaves of the western myrtle are a rich green in color, glaucous, single and aristocratically shaped. There are three veins in each leaf,



A SPREADING MYRTLE NEAR COQUILLE, ON THE OREGON COAST, THE CENTER OF THE MYRTLEWOOD INDUSTRY. THIS TREE IS REMARKABLE FOR ITS THICK FOLIATION AND THE REGULARITY AND BEAUTY OF ITS CONTOUR

consisting of a main central vein, on both sides of which extend other veins from near the base of the leaf to nearly the top. Tiny blue or white flowers, often fragrant, bloom in small, dense clusters. The petals resemble small tobacco pipes. The twigs are smooth and without spines.

A small fruit, dry and berry-like, contains three bulging lobes which are nuts. When green these lobes are joined, but they separate at maturity. The thin,



NOVELTIES FASHIONED OF MYRTLEWOOD—MILADY'S POWDER BOX, THE HOMELY AND USEFUL DARNING EGG AND A BOWL TO HOLD NUTS DURING THE FESTIVE HOLIDAY SEASON

hard-shelled seeds are liberated when the covering bursts. The cracking of the shell often ejects the seeds with considerable force, Nature's way of making sure that her seeds will reach the ground to germinate.

While the average height of the Pacific Coast myrtle is probably not more than 15 feet, individuals which have attained a height of eighty feet have been found. Trunk diameter at breast height varies from a few inches to six or more feet, the latter, however, being uncommon. The trees usually persist in relatively isolated groups. Growth is moderately fast, taking half a century to come to commercial use. But the limited range, and the further fact that the myrtle is not particularly productive, will doubtless always relegate the species to the class of rare trees.

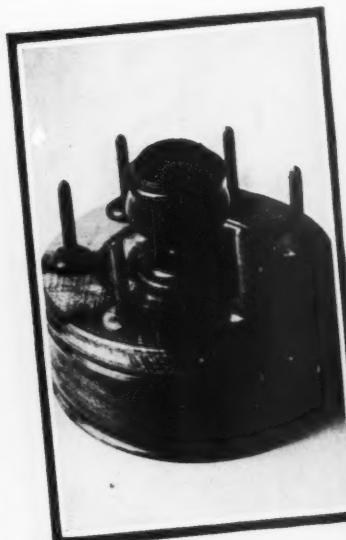
Seventy-five years ago it was realized that the myrtle was excellent for use in the crafts. Two brothers, Swiss, whose names are not now known, were stranded from a wrecked vessel on the Oregon coast. The others of the crew made their way inland to larger settlements, but the men from the Alps liked the climate and deter-

mined to stay. They had been woodworkers in their homeland and soon discovered the possibilities of myrtle. On account of transportation difficulties, however, the two were unable to make a success of their venture and abandoned it.

Myrtlewood is "spotted" in the forest and is either taken out after cutting by horse teams, or if a creek is handy, is allowed to float to a mill. The wood is then stored and seasoned for three years, after which it is selected and made into various articles.

Polished myrtlewood discloses two shades of yellow, a light golden, and streaks or spots of a warm brown, not unlike the traces of pitchblend which are found in some kinds of marble. The finished wood has a velvety appearance. The graining is erotic, producing splendid and magnificent effects, no two alike.

Even though present manufacture makes a light drain upon the wood, the western groves are becoming depleted and it is estimated that in a decade the myrtlewood industry will be a memory only.



BEAUTY AND UTILITY ARE REPRESENTED IN THESE MYRTLE-WOOD NOVELTIES—A SPOOL AND NEEDLE HOLDER, A CANDLE-STICK OF EXQUISITE GRACE AND THE EVER-USEFUL ASH-TRAY

# The Autobiography of Trees

## How Trees Are Being Made to Write Their Own Diaries

By DR. D. T. MACDOUGAL  
*Carnegie Institution of Washington*

**M**AKING trees write their own histories with paper and pencil may sound like an adventure into the wonderland of imagination. As a matter of fact it is merely an accomplishment of modern science—a practical entry into the mysteries which surround the growth and behavior of trees under varying conditions of environment. There are in the United States today a score or more of trees which "with pens in hand," so to speak, are writing their own diaries with an accuracy that leaves nothing to memory or to the morrow. The means by which these trees are being taught to write is the dendrograph, an instrument which records the growth behavior of a tree in relation to changes in the outside world. With this writing equipment, a tree is able to tell us how its life is affected by rainfall, a series of humid days, a period of drought, or by seasonal conditions of any kind.

During every period of the season in which the supply of food-material, moisture, temperature and light is within favorable range, trees add a layer of wood to their trunks. Sometimes for one reason or another two or three layers are made in a calendar year.

The total diameter increase in rapidly growing trees may be measured easily by the direct use of calipers or tapes. But many trees of great interest and importance put on layers of wood no thicker than a tenth of an inch annually, and some after the first two or three centuries of their existence add not

more than half this amount to the wood each year.

So it is obviously impossible to make annual measurements of any value of such small increments with instruments so crude as tape and calipers. Methods of greater precision are necessary for such determinations and to obtain the required accuracy the amount of growth must be magnified for the benefit of the observer.

In the last analysis not much may be learned about the agencies which affect the processes of growth unless variations in rate are measured and correlated directly with measurements of rain-fall, soil-moisture, humidity and illumination.

Answering these necessities the dendrograph was invented to measure variations in diameter with a precision greater than yet attained by any practical instrument and to make a continuous record of such variations (Fig. 1).

In designing this instrument the problem was to furnish the tree with a pen with which it might write its own diary. The essential part of such an instrument consists of a rigid floating frame or polygon of bars or rods of some material with a

small temperature coefficient so that it will maintain its dimensions unchanged by heat or cold. The nickel-steel compound known as "invar" and also fused silica meet these conditions adequately. A thrust screw extends from one side of the floating frame and makes contact with a smoothed spot in the inner bark. A slender sliding rod of fused silica on the opposite side of the tree is in contact with the tree at one end,

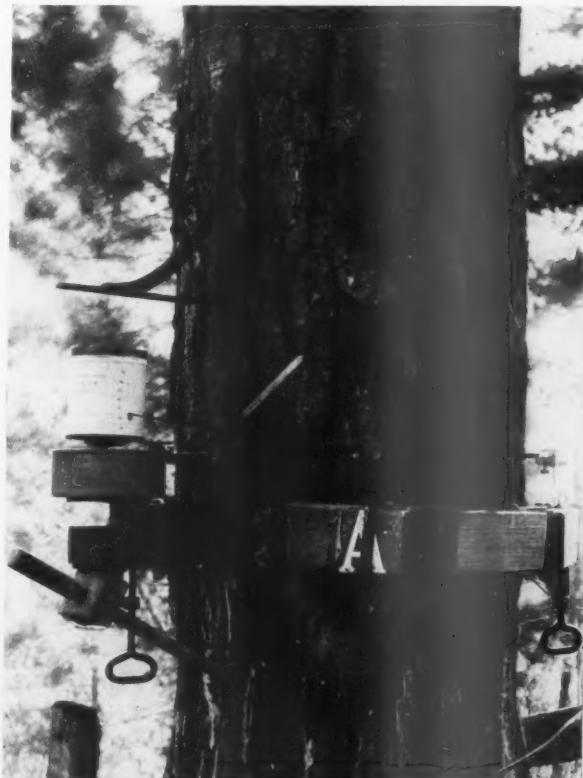


Figure 1. Dendrograph on basal part of trunk of Monterey pine No. 1, which has been under continuous observation since September, 1918. Photographed November, 1925.

while the other end presses against the short arm of a lever shaped like the capital letter L held in this position and pivoted at the angle or heel (See Fig. 1). A pen of the kind used in thermographs is fitted to the long arm of the L and traces a line on a sheet of paper ruled to millimeters and carried on a revolving drum (See Fig. 2).

Any change in the diameter in the tree will cause the pen to move up or down. With the levers arranged to give a magnification of 10 to 20 the diameter increase of a tree which adds in a season a layer of wood no thicker than this paper may be recorded.

The floating frame carrying the pen is, of course, the essential part of the instrument, and in the form now made represents numerous alterations and improvements on the original model of wood and steel. The greatest difficulty was encountered in fixing upon a device by which the floating frame and recorder might be held firmly in a suitable position. This was finally accomplished by the use of a belt of wooden blocks joined by metal links in such manner that it could be fastened to any desired degree of tightness around the trunk. Each block presses against the tree in a short tangent and it has been found that growth is not modified except at the actual contact.

Four or five slender wires arising from metal bases hold to the floating frame in such manner that this important part of the instrument is kept in place with a gentle pressure on the contact screw.

So strikingly is the sensitiveness of the tree to its surroundings recorded in its diary, that the observer who operates one of these dendrographs soon becomes deeply engrossed in the varying behavior of the tree from day to day.

The most obvious change in most trees is the daily expansion and contraction, quite independently of growth. The action of the leaf-pumps in pulling water up through the woody conduits is so powerful that the trunks of most trees show an actual shrinkage beginning in the morning and continuing until afternoon. This result is similar to the collapse of a soft hose

when suction is applied to one end. Late in the day the pumps slack up and the wood expands to the dimensions of early morning. Anything which affects water-loss from the leaves, or the supply entering the roots, such as fogs, rain or dry winds, will modify this program.

The record for five weeks of a Monterey pine (*Pinus radiata*) shows that the character of the daily variations in June and July is markedly different from that in September. A heavy fog through the day will prevent contraction; a rain will accentuate the nightly swelling. These daily changes may amount to as much as 1:200 to 1:1250 parts of the diameter in this pine.

The changes in question are directly opposite to those which might be caused by temperature, as the tree happens to shrink when it is warmest and is losing water rapidly, and it expands as it cools. It may be well to emphasize that the tree does really get cool and warm in view of the assertion of a humorist in the *Saturday Evening Post* that a tree maintains a temperature of 54 degrees!

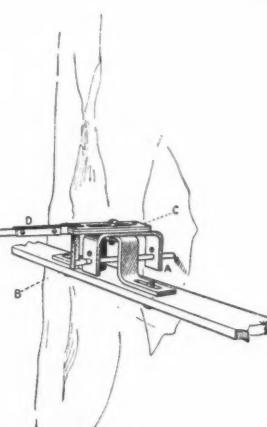


Figure 2. Design of lever set, and arrangement of pen lever to trace record on revolving cylinder. A, inner end of sliding rod in contact with tree. B, engagement of sliding rod with short arm of L-shaped lever. D, long arm of lever carrying pen. The lever set is attached to one member of the floating frame. (From Publication 307, Carnegie Institute of Washington, 1921.)

and on Monterey pine. An instrument was first installed on Monterey pine No. 1 four feet from the base in September, 1918. The record shows its behavior continuously to this moment. A second instrument was adjusted to the trunk, 27 feet above the base in January, 1920, and the traced line is also lengthening continuously. A modified form of the instrument was attached to a large root in 1923, so that at the present time the tree is busily writing a three-part diary.

The dendrographic records of the Monterey pine make a total of about three-fourths of a century. The information obtained by the dendrograph, together with the results of studies of the hydrostatic systems of trees, promise solutions of many problems in the physiology of woody plants.



# Ancient Ideas in

Some of the most common ideas in woodworking have been borrowed from the ancients or closely patterned after them. In some instances the source of the original has been lost in antiquity; in others the origin, progressive stages, and modern development can all be studied.

A thing as common and simple as the broom, was once a discovery. It may have been, probably was, evolved slowly, but when it first found a place in written records, it had not progressed farther than a bundle of boughs tied together, or held together in the hand. Such was the "besom" which Isaiah referred to as a symbol of annihilation, the "besom of destruction" with which Babylon was to be swept and made a desert "for the bittern and pools of water."

The ancients doubtless used the broom of boughs in sweeping their houses, tents, and camps; and the modern broom is constructed on the same plan and used for similar purposes. A wooded handle, at one end of which is tied a bundle of broomcorn, does not depart far from the idea represented 2,600 years ago by a bunch of boughs, the stems of which constituted the handle. But the original has come down to the present day side by side with the modifications and improvements which have resulted in the common broom. In this instance, not only the idea but the prototype itself has come down to us through thousands of years. A besom made of the boughs of the northern white cedar or arborvitae, may be seen fre-



Beautifully carved and inlaid, this burial case of ancient Egypt dates back to 300 B.C.

# Modern Woodwork

By HU MAXWELL

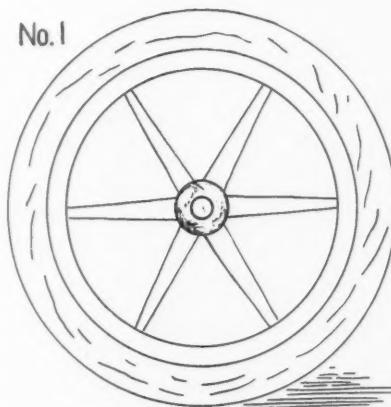
quently in the summer camps and bungalows in Michigan, Wisconsin, and New York. Campers sweep their floors with it, precisely as the nomads swept their tents in the days of Isaiah. The campers in our northwoods use the besom because the bundle of cedar boughs emits a pleasing odor when bruised and chafed in the act of sweeping, and the delicate perfume remains about the camp.

Everybody knows that the war club was an ancient weapon,

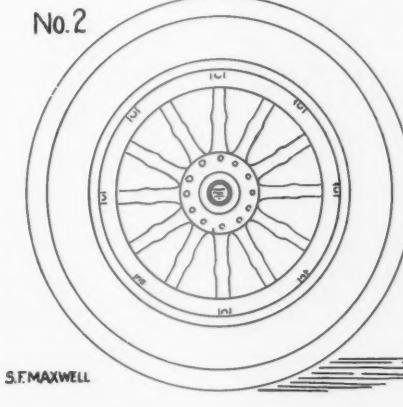
but it is not generally recognized that the club is still largely used without its form having changed much since its prehistoric original. The earliest hunters and warriors who carried clubs lived in a time too remote to have a place in history or even in tradition, and during untold ages the club remained in use with only slight modifications chiefly to make it more ornamental and pleasing in the eyes of the wild man. The Sioux Indian had reached his highest ambition in art when he was able to decorate his war club with a tassel of bear claws strung on a rawhide whang. The weapon has survived and is quite common today, principally in large cities where it has become the policeman's billy, or in the Emerald Isle, as a tradition, where it

assumed the form and function of the Irishman's shillalah. The policeman's billy is decorated with a silk tassel which is a step upward in progress from the bunch of bear claws dangling from the Indian's club. It is worthy of note that what was doubtless

No. 1



No. 2



S.F. MAXWELL

## THREE THOUSAND YEARS OF WHEEL EVOLUTION

No. 1 is a Hittite wooden chariot wheel from a rock carving at Sakchegoxi, in Syria, about the time of David of Israel, while No. 2 is of a modern automobile wheel. They are both drawn to about the same scale.

the first weapon used by primitive man after he emerged from the tooth-and-nail stage, should survive to this day with so little modification and no improvement at all. More of these wooden clubs are in use in New York now than were in use in the whole territory of the United States at the period of the discovery of America.

No recorded history is old enough to throw any light on the invention of the bow which archers used to propel their arrows. It was a weapon of war, an implement of the chase, and likewise it was a tool employed in drilling stone, boring wood and bone, and in lighting fires with tinder and firesticks. Apparently, the bow reached perfection very early in the records of the human race, or before there were any records except those furnished by geology, and it could not be further improved. At the present time enthusiastic members of archery clubs sometimes pay \$150 for a choice yew bow; yet it is doubtful whether such a bow is one whit better than that with which the unnamed archer at the battle of Ramoth-gilead "drew at a venture" and "smote the king of Israel between the joints of his harness" with such deadly effect.

The bow has practically passed out of use as a weapon of war though not as a toy or an article of sport. Its effectiveness was always based on the elasticity of wood, though that quality had no name in very ancient times. That same quality, elasticity, has led to the use of the bow in modern industry; but the bow is now cut in two pieces and each half makes a pickerstick, which is a very essential part of the loom which weaves cloth in textile mills. The ancient bow propelled arrows; the pickerstick throws shuttles. Both operations involve the same principle and work in almost the same way. Doubtless the primitive hunter searched the forests and consulted the old men in his search for the best wood for his bow, the wood with the highest resiliency, because that kind shot the arrows with greatest force and accuracy.

The ancient hunter had never heard of the "modulus of elasticity," but he knew how to pick a wood with plenty of spring. The loom maker who equips the modern cloth mill searches for the same kind of wood to throw the shuttle through the warp. He usually chooses hickory because it lasts longer and propels shuttles better. Far and prophetic, indeed, would have been the vision of the man who first learned that the resiliency of wood was capable of throwing projectiles, had he foreseen the modern pickerstick's function in the loom, shooting shuttles instead of arrows.

There is no foundation for even a guess as to how far back in the unrecorded history of the human race, travel by some sort of boat or raft was undertaken. Men turned to the rivers, lakes, and seas from both necessity and choice. These furnished the savage a supply of food, and journeys by water were often easier than by land, and frequently he might go by water when it was impossible to go in any other way.

But water furnished little food, and was valueless as a highway, unless means of navigation were available, and an artificially-hollowed log was perhaps the first boat. These were used in very early times. A white pine slab is preserved in the National Museum in Washington, D. C., which was found buried in mud at the bottom of a lake in New York. Apparently, it is a portion of a dugout canoe, and traces of charcoal indicate that it might have been fire-hollowed; but it is only a fragment, and since there is no way of telling how old it is, it lacks some of the elements of human interest which belong to an enormous oak canoe excavated from a stratum of clay near the river bank at Briggs, England, in 1884. Geological evidence places the period of its burial at about 1,000 years before Caesar's invasion of Britain. It is probably the oldest dugout canoe in existence. It was hewed from an oak log 48 feet long and six feet in diameter at the large end. The trunk had no signs of limbs, and it has been claimed that an oak of that size and form could not be found in Europe today. The hollow within conforms to the shape of the outside of the trunk. A break in one side had been repaired with a block of wood, and was calked with moss. The ancient relic is housed at Briggs.

Americans had not passed the stage of the fire-hollowed canoe when the settlement of this country by Europeans began. They made troughs in the same way for the storage of food. Yet the process of hollowing logs with fire is not so elementary and primitive as might be supposed. The United States Forest Service has made watering troughs for cattle and sheep by the fire method on some of the western ranges; and under certain conditions that method has been reported to be more advantageous than making the troughs with tools.

During pioneer times in this country the dugout canoes were common in all timbered regions. They were the early ferryboats on many streams for the accommodation of travelers in crossing; and long journeys by water, even military expeditions, were made possible by the use of dugout canoes, differing not at all in principle from prehistoric relics which have survived. Such canoes are still made, but not in as large numbers as formerly since they are not so badly needed, and also because suitable tree trunks from which to hew them have become scarce. Such a trunk when sawed into lumber is worth enough to buy a fine, light, factory-made canoe, which is preferable in every way to the heavy dugout. Yet the dugout is still met with in rural communities and in remote settlements.

The rollers which were placed under heavy bodies by the Egyptians of early dynasties, and by the Trojans at the siege of Troy, to make easier the work of transportation, constituted rather crude types of wheels and should be taken as the prototype of the rollers used by house movers, rather than as the origi-



AN ANCIENT EGYPTIAN CHARIOT

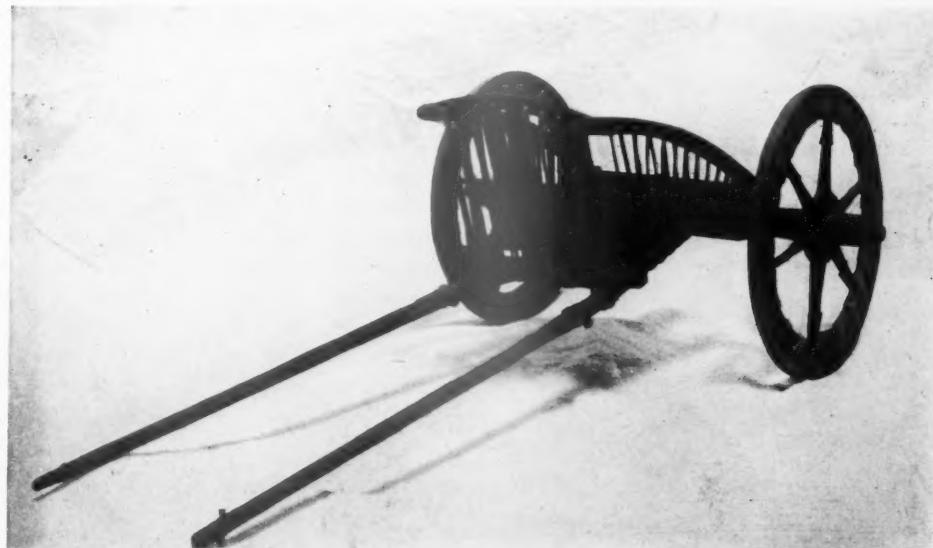
This model is of an original chariot of the Ptolemaic Era, which is preserved in the Florentine Museum, in Italy. It is complete in every part and made of birch wood. The wheels, of four spokes framed around the hub, are composed wholly of wood; the round rim is in four parts, the joints being scarfed for wrapping with thongs.

*Courtesy National Museum*

nals of the perfected wheel of today, or even of those of ancient times. A rock carving at Sakchegozu, Syria, shows a Hittite chariot wheel which would need only a little change in pattern and in size, and the addition of a pneumatic tire, to go into service on an up-to-date automobile. It might not be as strong as the modern auto wheel, for the Hittite wheel had only eight spokes to ten or twelve for the auto; but it had heavier felloes, and was made to run without tires. A duplicate of the Hittite chariot carving is in the Art Institute, Chicago, and the original carving is in the Berlin Museum.

The vehicle is supposed to date somewhat earlier than the reign of David at Jerusalem; and, though there is Bible authority that the Syrians had iron chariots, the one represented in the Sakchegozu bas-relief was evidently of wood. The particular species of wood cannot, of course, be determined from a stone-cut

The essential point to be emphasized is not the antiquity of the chariot, but rather that the wooden wheels which go on our high grade automobiles differ so little in size, material, and pattern from the wheels with which some forgotten Hittite equipped his chariot 3,000 years ago when he went out to hunt lions and drove a horse which must have been of the size of a Shetland pony, for the sculptor represented it to be



USED IN EGYPT ABOUT 300 B. C.

One original wheel of this chariot, together with the front and side raves, was found at Dashour by H. Abbot, and is in the Museum of the New York Historical Society. The wheel is 39 inches extreme diameter. The forked brace to which the shafts are attached is also preserved. The construction of the floor and arrangement of the thongs, based upon close measurement, are hypothetical. The wheels have six spokes, with slot near the hub, and felly in six pieces with scarfed joints. The tire of wood, in six parts, also scarfed, is attached to the felly by a lacing of thongs.

*Courtesy National Museum*

representation; but among the woods used by ancient chariot makers were birch, sycamore, and fig. The Hittite chariot was not the earliest of which there are carvings, pictures, or other representations. In fact, the chariot itself which belonged to Thothmous II of Egypt 3,300 years ago is still in existence.

about the same size as the lion which was being attacked.

The dowel is a small peg, pin, or rod. It may be made of wood or metal, but only the wooden dowel is here considered. It is used for different purposes in wood-work, but its most common employ-

ment is found where planks or panels are fastened together edge to edge or end to edge, in the manufacture of furniture, doors, sash, and other articles where concealed fastenings are desired. Ordinarily, holes are bored in the edges to be joined. The dowels are inserted in the holes prepared for them, after which the edges of the planks or panels are driven tightly together and the dowels hold them. When

table tops are made of several boards, the boards are fastened edge to edge with dowels. Different parts of doors are held together in the same way.

The modern dowel has come down from ancient times. The development in 4,000 years consists chiefly in the shape. The dowel once was quadrilateral in cross section, but it is now generally circular. There is a boat made of cedar planks in the Field Museum, Chicago. It was dug up in Egypt after it had lain buried forty centuries. The oars with which it had been propelled on the



Fig. 2

S.F. MAXWELL

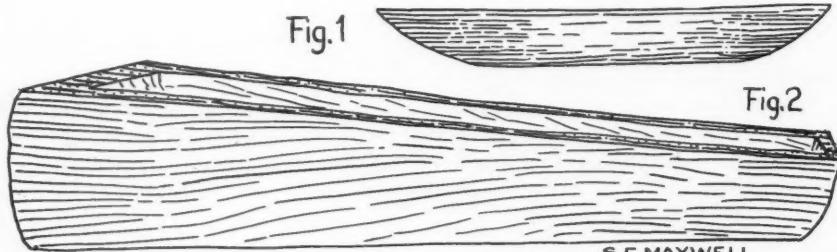
## BESOM AND BROOM

Two thousand six hundred years ago a bunch of boughs tied together, the stems constituting the handle, comprised the "besom of destruction" to which Isaiah referred as a symbol of annihilation, with which Babylon was to be swept and made a desert. And in the modern broom (Fig. 2) the idea has come down to us through the ages.

in place today. The weathering of the planks and the pole has partly exposed the dowels to view, and the manner of their insertion is easily noted.

These may be the oldest dowels in the world. The oar is cedar or some other softwood, but the dowels are hardwood of a species which might be determined by a microscopic examination, but in the absence of such an examination, may pass for cottonwood.

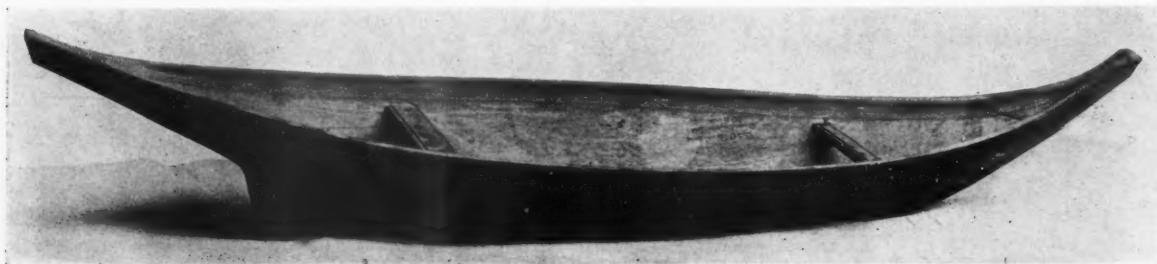
In the Field Museum's Egyptian collection are to be seen numerous other examples of dowel joinings, most of them being mummy cases ranging in age from 2,200 to 3,300 years. In



## BOATS OF HOLLOWED TREE TRUNKS

The lower and larger dugout is from ancient England, and is 3,000 years old. The upper and lighter sassafras canoe is modern, from the Ouchita River in Louisiana. The old boat is of oak.

nearly every instance the lids of the cases were fastened on with flat dowels of the same pattern as those used in the boat oar, but there are many different sizes. Some are a quarter of an inch thick, one and a half inches wide, and three or four inches long. These are the smallest of the quadrilateral dowels. The largest are two and a half inches wide, half an



EARLY AMERICAN

Courtesy National Museum

This type of open, keelless dugout was used by Indians on the northwest coast of America for traveling, hunting, fishing, etc. It has pointed, sharp, high projecting ends, round bilge narrow flat floor; much sheer on top; three thwarts; forward one having mast hole. Two paddles, with spear-shaped blades and cross-bar handles were used. Its overall length was 26 feet 6 inches, and on bottom 15 feet. Its beam is 5 feet 6 inches, and it was collected by the Wilkes Exploring Expedition.



THE MUMMY CASE, WITH DOWELED LID CLOSED DOWN  
Ancient Egypt used the dowel over a period of a thousand years or more.

some of the cedar pegs are as large as a forty-penny spike.

The modern dowel is of better workmanship than the ancient, but it will not any better serve the purpose for which it is made. Twelve million feet of wood are made into dowels annually in the United States. In proportion to the total use of wood in ancient Egypt, the dowel was in more use there than with us. They had no nails or other metal fastenings. We have improved the dowel by inventing concealed means of holding it in the holes after it has been driven. The Egyptians had no concealed dowel fastener. If they fastened it at all, it was with a little wooden peg driven through it from the outside like a nail. They did not try to conceal this peg, which was

inch thick, and five or six inches long. The size, apparently, does not indicate any particular historical period of the 1,000 years covered by the mummy case exhibit. Large and small dowels occur indiscriminately in the different periods and dynasties. The dowels are inserted in quadrilateral mortises, which seem to have been made with very poor and dull tools. Frequently the wood was broken and crushed instead of being cut smoothly.

The mummy case makers used round as well as quadrilateral dowels; but those of round form should more properly be called pegs. They were employed, for the most part, as the modern carpenter might use nails or screws. Some of the round pegs are cedar of Lebanon and some are hardwood. The smallest are hardwood and are about the size of an eight penny nail, but

often used in making mummy cases. By employing these pegs, the lid was locked on and could not be pried off without breaking the wood. This peg or lock was often of a wood differing in color from the wood of the case.

The modern user locks his dowel securely in place after it has been driven in the holes made for it, and no outward sign of the locking device is visible. To that extent he has improved upon the woodworker in the land of the Nile. The modern dowel may be made with threads cut in like those of a screw. When tightly driven these threads sink into and grip the surrounding wood and hold fast where a smooth dowel might be withdrawn. A second device for locking the dowel in place takes the form of a small wooden wedge, the point of which is inserted in a split in the end of the dowel. Such a wedge may be placed in each end of a dowel, and when it is driven hard home in forcing together the edges which are to be fastened, the little wedges spread the ends of the dowel and lock it fast.

The forty-centuries-old Nile boat, already referred to, teaches another lesson in woodworking. The Egyptian boat builder knew how to join planks together with dovetails, but his method was different from ours. The boat itself is about eight feet wide, thirty long, and more than three feet deep, and was

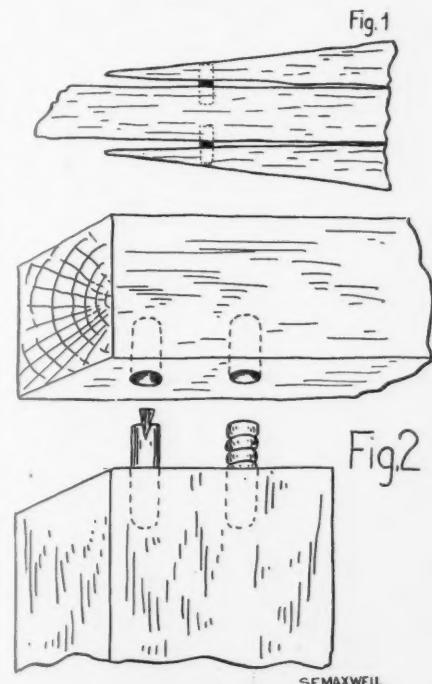


Fig. 1

Fig. 2

S.F. MAXWELL  
DOWEL DEVELOPMENT FROM 2,200 B.C. TO PRESENT

No. 1 is of an Egyptian quadrilateral dowel, 4,100 years old, in the Field Museum, Chicago, interestingly described by the author of this article. And No. 2 is a drawing of a modern, round dowel and shows the method of locking.

(Continued on Page 680)



Photograph by Michael Greenan

## REVENGE

Old Mister Turkey Gobbler,  
Was struttin' round one day,  
As if he was king of the barnyard  
When I happened to pass that way.



Then he spread out his tail like a peacock  
And he stuck out his funny old head,  
So I ran pretty fast, I can tell you,  
For he looked so angry and red.

But what do you think? This morning  
I heard my grandfather say—  
"I think we'll have that turkey  
For dinner Thanksgiving Day."



So I'm even with Mister Gobbler,  
For the day when I turned and ran,  
And I mean to eat as much of him  
As ever I possibly can.

# Logs and Leather

## The Chestnut—from Tree to Tannin

By M. A. MATTOON

THE common ordinary "garden variety" of chestnut tree, familiar to everyone, is intensely utilitarian. Its fruit is a delight to the palate of the youngster who goes to the woods in the fall or visits the whistling stand of the street vender; its lower is a mid-summer beauty; its wood, when sawed into lumber, is prized for many purposes. Ties hewed from it are durable in the ground. The wires of much of our national system of communication by telephone and telegraph are strung on chestnut poles. The farmer knows its value for firewood, fence posts and rails. Each of these uses is a story in itself. But there is another use, less generally understood, yet affecting us all from the time we wear our first pair of shoes.

Chestnut wood contains from seven to eleven percent tannin, a material extracted from the wood by chemical leaching and used to a very large extent in the curing or tanning of rawhides to commercial leather. De-

coctions and infusions of vegetable matter in concentrated form, known as extracts, are old as history, but the use of tannin extract from chestnut wood is comparatively recent. Even within the last century roughly ground bark spread in layers between rawhides and laid in vats filled with water constituted the tanning process—a process which took from one year to two years' time. The discovery of a practical method of leaching pure tannin from chestnut wood in a few hours' time revolutionized the tanning industry and established a new market for chestnut wood of all sizes.

The great chestnut region of the United States comprises the 33,000,000 acres of wooded land in the southern Appalachian Mountains, Appalachian Valley, and Cumberland and Allegheny highlands. It has been estimated that this vast area contains 33,700,000 cords of chestnut acid-wood, of which 28,000,000 cords are now available, or potentially available, to existing ex-



*Courtesy Champion Fibre Company*

FROM SUCH MAGNIFICENT VETERANS AS THESE, OUR GREAT TANNIN INDUSTRY HAS FOUND ITS SOURCE OF SUPPLY IN THE PAST, BUT BECAUSE OF THE RAVAGES OF THE CHESTNUT BLIGHT, SUBSTITUTES MUST BE FOUND TO FURNISH THE FUTURE SUPPLY

tract plants. The industry centers around the heavy chestnut stands in the Blue Ridge section of Western North Carolina. Within the heart of this area is located Pisgah National Forest of 270,000 acres wherein the production and marketing of chestnut acidwood has become an important forest activity.

Ten extract plants now obtain their supply of wood from the western counties of North Carolina and their combined consumption is estimated at 406,500 cords annually. The Pisgah National Forest plays an important part in meeting this demand on the chestnut resources of the section, but more important is its reserve of growing chestnut for use when private properties are cut over. Large bodies of chestnut timber, now unmerchantable because of their remoteness from railroads but destined to become marketable as present accessible stands are cut off, are located on these National Forest lands. These more remote areas are gradually being tapped as the demand for wood increases, as prices rise and new railroad and highway developments are completed.

Aside from protecting the headwaters of navigable streams, the main object of the Eastern National Forests is the production of timber. The greatest use of the land is not reached unless it is kept continuously producing trees of usable species in a thrifty, growing condition. Mature, or overmature, timber does not produce wood at the maximum rate. It is in the position of the ripe or overripe crop of the farmer ready for harvesting. Forty to sixty per cent of the volume of timber on Pisgah National Forest is mature chestnut ripe for cutting.

From the point of view of the forester or conservationist the chestnut seems an admirable tree with which to work. Its varied usefulness, its rapid growth, its capacity to reproduce itself quickly, its complete utilization would point to its extreme desirability. It has, however one black mark against its consideration in plans for the disposal of

these mature stands, and for the composition and management of future forests: It is subject to *endothia*—the bark disease which kills the tree in large numbers. The "blight" has now practically wiped out the chestnut in New England, New York and Pennsylvania and now occurs throughout its entire commercial range. Experience has demonstrated the impossibility of stopping the spread of the disease and plans for the management of the forests of this region must for safety's sake assume the ultimate destruction of chestnut in the southern Appalachians as in New England.

Luckily the chestnut is resistant to decay and dead wood is as desirable for the production of tannic extract as green. So in the passing of this doomed species as much as possible should be put to beneficial use. Its conversion into tannic extract will play an important part in this problem of salvage.

The waste attendant upon the harvesting of a chestnut tree in the form of acidwood is comparatively small. Consider the chestnut as cut under Pisgah National Forest regulations: The stump is not over 12 inches high; the entire stem is used to a top diameter of 4 inches; all limbs 4 inches in diameter and over that are not too crooked are utilized. There is no appreciable waste in sawdust since the wood is split. Defects in the wood do not cause loss for all wood that is sound enough to hold together is accepted at the extract plant. Utilization is very close.

To convert the standing tree into wood usable at the extract plant is an interesting process and one which varies widely with different operators and different topography. The trees are felled,

limbed and cut into 5-foot blocks which in turn are split into sticks not over 8 inches in diameter. In rough mountain sections the methods of getting the wood from the stump to the point where it can be transported in large quantities are many: On steep slopes the stems are often slid down by gravity—ballooted it is some-



SO OFTEN CHESTNUT GROWS IN INACCESSIBLE LOCALITIES, AND BOARD CHUTES ARE USED FOR TRANSPORTING THE SPLIT BOLES DOWN THE STEEP MOUNTAIN SIDE

times called—to a point where they can be conveniently worked up into 5-foot sticks. Sometimes the stem is cut into 5-foot blocks and these rolled down to a landing or splitting yard. A very common method on moderate slopes is to skid the logs into the yard with horses or mules. If the splitting yard is not at the loading point, the split wood is occasionally run short distances in board chutes, short flumes, or sledded. The wood is then piled or rickled for measurement and is

At the extract plant the wood is rickled in large yards where it seasons for several months. This is of great importance since it has a direct bearing on the yield of tannin. The seasoned wood is fed through the chipper or "hog," a machine with rapidly revolving knives, a noisy snort, and a marvelous appetite, and is ground into small chips. The chips are passed into digesters or large tanks where under heat and pressure the tannin is chemically dissolved from the wood. The solution is



Courtesy Champion Fibre Company  
IN GETTING OUT THE CHESTNUT, BOARD FLUMES ARE FREQUENTLY USED TO BRING IN THE BOLTS  
FROM THE BACK COUNTRY TO CENTRAL POINTS FOR RAILROAD TRANSPORTATION

ready for transportation to the plant. The method of transporting large quantities of wood to the plant or nearest railroad siding depends very largely on the size of the operation and the nature of the country. The farmer or small operator, who has a few cords to sell, hauls his wood by sled or wagon direct to the extract plant or to the nearest railroad siding where he loads it in box cars. In the Blue Ridge section where mountain streams are plentiful, and the flow of water abundant, the board V-type flume is in common use for the transportation of wood long distances from market. Very often the flume is supplemented by narrow gauge railroad or motor truck.

then decolorized, evaporated to the proper degree of concentration, or to powder form, and is shipped to the tanneries for use in tanning leather.

The sale of chestnut stumps for acidwood from National Forest land has become an economic factor in the communities near which they are located. The marketing of this wood has provided many of the local farmers and residents with work for themselves and their stock during the winter season when farm work is at a low ebb. It furnishes many who are located in remote sections where ready money is scarce with a source of income in cash.

### The Washington and Lafayette Magnolias

AT Mount Vernon stand two magnificent magnolias known to have been planted in the year 1784—the occasion of LaFayette's first visit to America.

This distinguished young General spent much of his time with his friends—the Washingtons—at their beau-

tiful, plantation retreat on the lower Potomac.

To celebrate the occasion of the visit, the host and his guest planted these two magnolias, and today they are symbolic of that remarkable friendship which existed between the two men.



#### THE TRACTOR AT EXTREMES OF SERVICE

The adaptability of the tractor to varied woods conditions is indicated by these pictures—the upper one showing a tractor busy in the swamps of Arkansas, hauling a ten-ton load in a hardwood logging operation, while the lower one is also a ten-tonner, bringing out the timber on a winter woods operation in upper New York.

# Caterpillar Tractors in the Logging Woods

By R. W. AYRES

**A**S THE logging centers of this country migrated from the New England states, then to the Lake states, next to the Southern states and finally to California and the Northwest, animal power was gradually superseded by steam and electricity in hauling logs out of the woods. The great steam donkeys and skidders and electric donkeys are the latest development in the big timber of the Pacific Coast.

But there were still areas where horse power survived as the cheapest method of logging, mainly in the Southern states, on the east slopes of the Sierra Nevadas in California, and the eastern parts of Oregon. In these regions the topography is fairly level, the timber is of medium size and the trees grow in open stands. Here horses hitched to a set of high wooden wheels transported the logs from the stump to the mill or railroad.

About five years ago lumbermen, observing the development of caterpillar tractors during the war, be-

gan experimenting with them as an aid to their business. Tractors were hitched to the old wooden wheels and it was found that they could as easily surpass the horse here as the automobile and motor truck have in other fields. The old wooden wheels were replaced by steel ones better fitted for the tractors. Still later large steel wheels of special design and greater log carrying capacity were invented, equipped with an oil hoist.

So today the gasoline driven caterpillar tractor is being rapidly adapted by the lumber industry both to replace horse power and also, in certain localities, the steam donkey engine as an economical method of transporting logs from the stump to the mill or to the railroad. This new method of logging is not only advantageous to the industry but has the endorsement of the United States Forest Service, because where it can be substituted for steam power it means a great reduction in the forest fire hazard and, what is of almost equal importance, tractors, where properly



THE "CAT" AND ITS "BUMMER"

This 42,000-foot log will have to come along when the "cat" says so. The bummer, at the rear, supports one end of the log and makes skidding a simple matter.



THE FAMOUS "SIXTY" IN ACTION

This docile old "cat" creeps along contentedly with almost 4,000 feet of logs on a California pine operation.

handled, do far less damage to the young stands of timber which the Forest Service leaves on the ground in every timber sale area to form a second crop for future cutting. It is fortunate when an industrial method will benefit both the industry and the public interest.

Improvements in tractors and wheels combined with increasing skill and experience in their use proved that they could not only log any country in which horses were used but could be worked where donkey engines had been used for logging. Where tractors can be used they are more economical than donkeys. They require less men to operate, there is no expense for cables, and although the rate of depreciation is higher than for a donkey, the initial cost is about half.

The eastern Sierra country of California furnishes typical tractor or "cat" logging operations. The country is characterized by open meadows or plains bordered by rolling timbered hills. A railroad is built along the lower slopes in order to be below all of the timber. Spur lines are run into the deeper gulches. In every gulch or indentation of the hills a landing place for the logs is selected towards which all of the adjacent ground slopes naturally. This is called a "setting." Main and branch roads over which the tractors will work are determined upon and marked out. Sometimes a main road is routed along the bottom of

a ravine with spurs extending up the tributary gulches or along the ridges between them.

The timber is then felled parallel to the nearest road so as to lie in the direction in which it will be taken out.

If the area is covered with underbrush or dense young timber a gang of swamplers clears the main routes and as much of the spurs as may be necessary. In some localities where there is very much undergrowth wheels are not used because of the cost of swamping, but tractors drag or "skid" the logs to the landings. Often it may not be possible to use the wheels

along narrow ravines or on parts of steep side hills. Again there are portions of the area where the timber is too small to justify the use of wheels.

After the roads are laid out and swamped clear, the logs are "bunched" or rolled into piles for the wheels. Sometimes a team of horses, or a small tractor, or both working together with a crew of three men do this work.

These steps have all been in progress while the wheel tractors are busy elsewhere. All is now ready for the logging tractors. Two bunching crews are needed to keep in advance of three or four wheel tractors and in some operations the bunching is only a little in advance of logging. The average bunch for



OFF FOR THE WOODS!

Tractor with big wheels makes a rig particularly adapted to the level and rolling country of the eastern slope of the Sierra.

a small set of wheels contains 1,200 board feet and for the largest size will average 2,800.

Briefly this is a word picture of a typical "cat" logging operation in the eastern Sierra country. Sometimes the conditions of slope, size of timber or amount of under-growth which is present makes it advisable to follow a different method.

The cost of operation and efficiency of a ten-ton or sixty horse-power caterpillar tractor depends upon skill in handling and care in maintenance as well as upon the nature of the topography and the class of timber through which the tractor is operated. But under average conditions such as are found in eastern California the tractor should deliver, when using wheels, about 50,000 board feet of logs per day, logging in timber that will run from 3 to 5 logs per thousand feet and over slopes up to 30 per cent with an average haul of 2,000 feet.

The life of a tractor is estimated at four years and the original cost is about \$6,000. Excluding wages and including gas, oil, repairs, depreciation and interest the average daily cost is about \$30.

The maximum economical hauling distance is around 2,400 feet. For longer hauls it is really cheaper to build railroad.



**EFFICIENCY ON ROUGHER GROUND**

Up-hill or down, just so it isn't too much either way, the tractor piles up an unusual record at bringing in the logs.

The size of the timber is always an important factor in logging costs. Very small logs averaging 10 to the thousand board feet are more expensive to handle and in regions where all the timber is small the cost of tractors and wheels may not be justified.

Slope too, is important. Heavily loaded tractors and wheels have not been successfully operated where adverse grades must be overcome. All railroads should be built so that the ground will slope toward landings along the track. The ten-ton and sixty horse-power tractors can climb a 30 per cent slope with the wheels empty or can turn around and back up slopes slightly

over 40 per cent. The steeper the slope the greater the output because the outward trip when empty can be made at the same speed on a 30 per cent as on a 15 per cent grade, while a greater speed is obtained when returning loaded on the 30 per cent than on the 15 per cent slope.

"Cats" have been operated in three feet of snow in this region. They can not be used where there are many large boulders nor where there is much outcropping rock. On steep side hills they must be run up and down at right angles to the contours.

The United States Forest Service is so much in favor of the caterpillar that it is encouraging its use on timber sales in the National Forests.



**FIVE-TON TRACTOR "BUNCHING" LOGS**

The ease with which this "cat" is handled adapts it particularly for bunching logs for the big wheels.



# EDITORIAL

## A Solid Front for Conservation

**R**EGARDLESS of the reasons which may be assigned for the important conservation measures left unacted upon by the last session of Congress, the solemn fact remains that they are still important and undecided. This means but one thing to those who are working for conservation in the United States—redoubled effort to bring about their passage by Congress during the short session about to begin. The warm June day which saw the close of Congress saw the oblivion of adjournment settle over the Migratory Bird Refuge Bill and the amendments for adequate forest fire appropriations, and also witnessed the pigeon-holing of a fiscal policy for the creation of National Forests in the eastern half of the United States. National Park standards became involved in legislation with a strong political odor. Solution of the question as to where grazing on the public lands and National Forests fits in with the whole conservation program was postponed, and the subject of stream pollution was not even considered.

There is probably no group of conservationists which is not interested rather directly in every one of these

key questions. The method of popularizing the demand and bringing it before the members of Congress, however, has been one of group effort rather than united endeavor. Congress is not altogether to be blamed, if before such a well-meant but ununited series of campaigns, its members became confused and cautious.

No Congressman is a superman, capable of using his unlimited powers to analyze every question, and conservation is only one of many broad problems upon which he is called to take action. If conservationists should put themselves in the place of the important Congressional committees and have offered them for consideration a list of measures such as those which were lost in the last session, they would certainly want to know how well the individual sponsors were united in their many-sided program.

The progress of conservation demands that its advocates unite their support for the important conservation issues needing Congressional action. Probably no amount of single group effort could compare with such united weight at the proper moment.

## A Plea for "Ultimate Economy"

**S**IXTEEN men, representing extensive ownership of forest lands, business and banking interest in forest regions, and the general public welfare of the entire country, conferred with President Coolidge on October 7 and appealed to him for a fairer assumption by the Federal Government of its national obligations to stop forest fires. These men, led by a group from the Pacific Northwest, which has just emerged from one of the worst forest fire experiences in its history, frankly laid before the President the problem of a national menace which cooperative effort has not yet succeeded in curbing. They declared that the Federal Government, to which under the law they have looked for complete cooperation, is failing to do its share. They disclosed an ineffectiveness in present forest fire protection which can be remedied only by the more efficient correlation of government agencies and by a larger degree of financial support by Uncle Sam.

There is no doubt that the President was impressed by the gravity of the situation presented to him. He said as much. No other impression could result from the story which this delegation had to tell. Made up of a majority of men who for years have spent vast sums not only to protect their own lands but a neglected public domain as well, they came "as good citizens" in a constructive spirit, and with an earnestness borne of desperate fighting with fire in the woods. Their complaint went directly to the heart of the principle upon which the whole scheme of forest fire prevention in this country is based, namely, cooperative effort as expressed by the Clarke-McNary Act.

This act, passed a few years ago and heralded as the solution of the forest fire menace, was based upon the recognized principle that private interests, the states, and the Federal Government each have definite public responsibilities in forest fire protection. To meet the Govern-

ment's public welfare obligations, it authorized an appropriation of two and a half million dollars, predicated on the understanding that Uncle Sam should meet one-fourth of the cost of fire protection, the states another fourth, and private agencies the remaining one-half. This act was taken at face value by states and private agencies which today are spending in the aggregate \$3,775,000 to prevent and fight forest fires. Against this expenditure the Federal Government can show only \$710,000. Small wonder that the cooperators fear collapse of the Clarke-McNary system under such rules of arithmetic. Small wonder, too, that the nation's forest fire problem is not being solved.

The delegation also pointed out that under the present scheme of economy as practiced by the Federal Government in fire protection on the National Forests, the bulk of its money goes into fire fighting rather than fire prevention, thus entailing huge emergency appropriations

which might be avoided if more money were provided for fire prevention. This they rightly hold is poor economy. The total increase which the delegation asked the President to approve in next year's fire appropriations amounts to only \$845,000—an investment of ultimate economy. Considering the public and private interests at stake, it is a modest request. The president of The American Forestry Association participated in the meeting with President Coolidge and reiterated what the Association has consistently maintained, that the Federal Government must in good faith meet its national responsibilities in forest fire protection. Otherwise, its whole program of conservation is inconsistent and shortsighted. It is to be hoped that President Coolidge, recognizing the situation, will be prompt to apply his principle of "ultimate economy"—an increase in government expenses now, in order to effect later vastly greater savings in money and natural resources.

## Conservation and Criticism

SOME of the difficulties with which lumbermen have been confronted in applying the principles of forestry to their business are ably presented by Doctor Wilson Compton in his article, "A View of the Woods from the Inside." It is quite true that the American lumberman in recent years has not had an easy trail to travel. The lumber industry is one of the major industries of the country. It is likewise one of the most competitive. The average lumberman must today compete with the ever-increasing substitutes for wood, marketed by efficient and high-powered sales organizations. Time was when he could sit at home and take orders for his products. The past quarter of a century has changed all that. Today he must fight for his markets both in and outside his own industry. The aggregate investments in mills, equipment and timberlands of the lumber industry are tremendous. The lumberman must protect them and make them pay. Otherwise, industrial chaos!

Doctor Compton's assertion that forestry to the private landowner is fundamentally a matter of dollars and cents is, we think, fully understood by men of business and students of conservation. Many things, notably taxes, forest fires, and uncertainty of profits, have combined to make him hesitate in adopting forestry practice in his operations. The fact that he has been criticized for destructive and wasteful methods, and for an apparent refusal to change them, has not helped his personal state of mind, nor his standing in the public eye as a conservationist. It has, however, unquestionably stimulated his study of forest problems and his adoption of more conservative methods of lumbering and utilization.

To what extent unwarranted criticism of the lumbermen may be laid at the door of the conservation move-

ment it would be difficult to say. Doctor Compton's assertion that in the early days leaders of conservation had to have a diabolical enemy to hate, and therefore turned upon the lumbermen is, we think, not justified. The kind of criticism to which he refers was carried to its peak during the years when big business of all kinds was the object of public and political attack, and the lumber industry specifically was under investigation by the Department of Justice and was brought to trial for violation of the Sherman Anti-Trust Act. These years produced a great group of so-called muck-raking writers and clever cartoonists and at every opportunity big business was seized upon for sensational handling, and the creation of public prejudice. This was quite apart from the conservation movement.

Every great movement in the public interest is colored and enlivened with much emotion. There are always people, without a clear and complete understanding of conditions, ready to criticize. This is particularly true of the conservation movement, because the destruction of great forests, the shambles of a lumbered area, or the destructive fury of a forest fire arouse and intensify human emotions. Under such conditions people are quick to jump at conclusions, and often quick to act. Despite the inevitable extremists of the conservation movement, the fact remains that the conservation leaders have been straight thinkers and have developed a school of conservation thought that has kept the movement on a sound economic basis. Without this main body of clear thinkers, we wonder what might have happened to the lumber industry at the hands of an emotional public.

Whatever may have been the currents and cross currents of emotional criticism in the past the fact remains that forest conservation has moved forward slowly but surely along sound economic lines.

# Giving the Lookout Man a Chance

THE so-called "eyes of the forest" have not always had the full energy of a strong body back of them when their owner was attempting to concentrate on the location of a distant smoke. Often an uncomfortable toe-hold on a sharp rock or a tired hand grasping a pitchy limb in the top of a pine tree, was of first concern.

Later the wooden tower or the bleak lookout house on a rock where the view was clear, gave the lookout man more of a chance. Then came the steel tower pointing its galvanized nose high in the air and sheltering the vigilante who worked with his eyes.

Long experience in building towers for windmills and other purposes proved of immediate value to manufacturers when the need for durable, well manufactured, easily assembled and transported fire towers was felt. The result



UP A TREE

A crude arrangement of telephone wire ladder leading to a platform high in a pine tree. This is maximum exertion for a poor view.

was a type of structure strong enough to resist high winds in exposed locations, durable against weathering and reasonable in price. It was a real contribution to the fight against forest fires which depends so much on quick detection and reporting.

Another feature is the convenient package form in which these towers are shipped for relay to rugged locations. The old ranger might be seen "scratchin' aimless in his hair" as he figured how to cut the next brace or post for his wooden tower. Now he receives this metal puzzle, puts it on a truck or a pack train, reads the plan, calls his neighbors and in a comparatively short time tightens the last bolt, wipes his brow and plants his "looker."

A typical standard form of tower known as the L-40 is 60 feet high with an inside stairway. There are frequent landings of good heavy lumber. The house at the top is seven feet square, about seven feet high, and



NOT BUILT BY SWISS FAMILY ROBINSON

But it might have been. This wobbly refuge serves to protect from sun and wind but can hardly be called efficient as a lookout house.

the lower part is enclosed with galvanized steel sheets. There are two windows on a side and the galvanized roof is made in four sections so that it may be handled and placed from the inside of the house. Entrance is made through an easily opened trap door. There are numerous other tower types of varying size and convenience.

While most of these towers are standardized, experts are sometimes called upon to design special structures for difficult sites or to harmonize with the nearby buildings of a mountain resort.

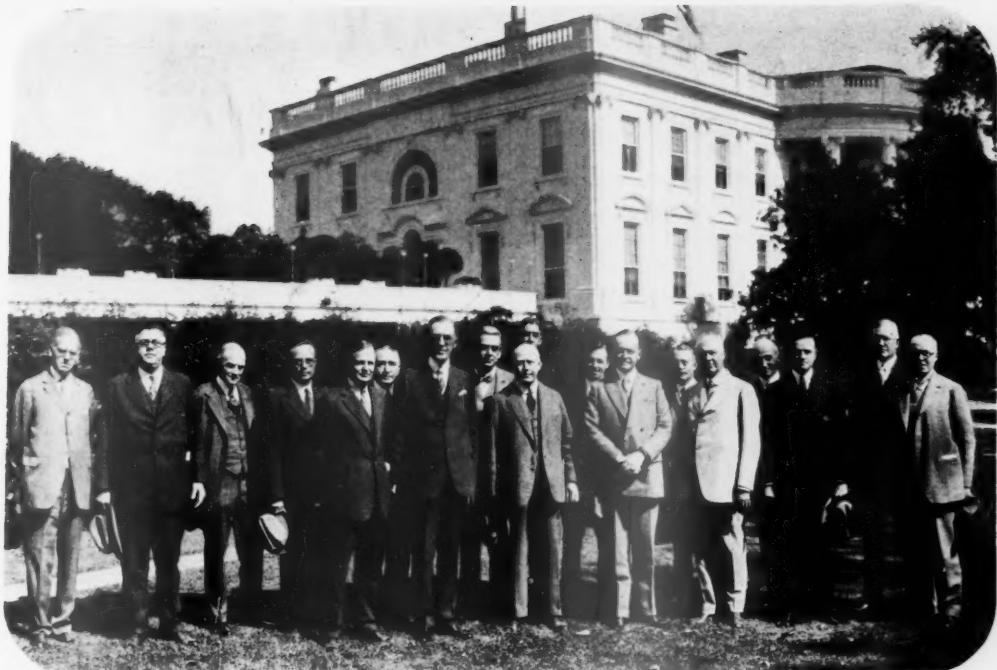
Large numbers of steel observation towers are in use by the United States Forest Service. Many of the states and timber owning companies also use them as standard equipment. The steel tower is here to stay.



Courtesy Aermotor Company

STEEL TOWER UNDER CONSTRUCTION

This modern, dependable steel structure is shipped in convenient packages and erected with minimum effort. When the last bolt is tightened the tower is there to stay.



Photograph by Schutz

CONFERENCE ON FIRE PROTECTION

Reading from left to right: Gen. Herbert N. Lord, Director of Budget; Andrew A. Rahn, Vice-President, Shevin, Carpenter and Clark, of Minneapolis; George D. Pratt, President of The American Forestry Association; C. B. Sanderson, Seattle, Milwaukee Land Company; Frank G. Wisner, Eastman-Gardiner Company, Laurel, Mississippi; J. H. Bloedel, Seattle Bloedel-Donovan Lumber Mills, Bellingham, Washington; C. A. Barton, Boise, Idaho, Boise-Payette Lumber Company; E. T. Allen, Western Forestry and Conservation Association; John M. Bush, Negaunee, Michigan, Cleveland Cliffs Iron Company; (above) Julian E. Rothery, New York, International Paper Company; Shirley W. Allen, Forester, The American Forestry Association; President Coolidge; John W. Blodgett, Grand Rapids, Michigan, Michigan-California Lumber Company of California and other Western interests; A. W. Laird, Potlatch, Idaho, President Western Forestry and Conservation Association, head of Potlatch Lumber Company; R. B. Hale, San Francisco, President California Development Association; E. C. Sammons, Portland, Oregon, Portland Clearing House Association; R. E. Danner, Detroit, Booth-Kelly Lumber Company of Oregon and other Western interests; J. J. Donovan, President Washington State Chamber of Commerce and Vice-president Bloedel-Donovan Lumber Mills, Bellingham, Washington.

## Cooperators Confer With President Coolidge to Cut Down Forest Fire Loss

**I** WANT to thank you gentlemen for coming great distances to bring this matter of forest fire protection to my attention. You have my complete sympathy. I think we should perhaps raise our appropriation for this purpose. I don't know just how much. We will see what we can do."

In substantially these words President Coolidge closed a remarkable conference on October 7 with fire cooperators, timberland owners and business men from all parts of the nation. Most of them were from the Pacific Northwest where the greatest timber reserves are located and where the plan for the conference originated. The American Forestry Association participated in a public welfare capacity and was represented by President George D. Pratt and Forester Shirley W. Allen.

Led by A. W. Laird, of Potlatch, Idaho, President of the Western Forestry and Conservation Association, the delegation called on President Coolidge to give him

an idea of a desperate forest fire situation in which the federal government is failing to assume its proper share of obligation.

In his very earnest presentation, Mr. Laird said to the President: "We want to emphasize that protection of life, resources and reforestation from forest fires is a grave responsibility shared by private, state and federal agencies and one not being met with satisfactory efficiency. It can not be met until all have a clear picture of a suitably complete and coordinated program so that each agency comprehends what it must do to cooperate constructively and adequately. Such a program picture is now lacking. Private and state agencies cannot establish it. It requires the constructive interest of the administration. No request is being made for federal aid to lighten others' burdens—only that the Government hold up its end as well as do other responsible agencies."

Mr. Laird first reviewed briefly the enactment of the

Clarke-McNary Law as an achievement of the present administration and declared that the states and private timberland owners had taken its cooperative fire protection provisions at face value. Having assumed three-fourths of the responsibility for protecting lands in which joint federal, state and private interests exists, the two latter agencies are now spending about \$3,775,000, he said. This amounts to one-half of their share of a complete program. To keep pace with this the federal government should spend \$1,250,000, whereas the present year's appropriation is only \$710,000.

Unless the administration directs Congress to go forward with its own proposal for this progressive program, it was pointed out that the whole system of cooperative fire protection is likely to break down and end in failure.

Mr. Laird then called attention to the highly organized fire protection system in the five heavily timbered Pacific Coast States and emphasized the need for providing funds to protect the timbered public domain lands. These lands now ride free, he said, except for a fund of \$25,000 a year to be spread over 2,600,000 acres. The result is a cost of \$67,000 a year to the states and

private owners to forestall being burned out by public domain fires.

More funds must be made available for prevention of forest fires on the National Forests, the President was told, if eventual emergency drains on the treasury for fire fighting are to be avoided. The good business of such a policy is a matter of experience in the record of fire losses on private land, Mr. Laird said.

Adequate provision for fire weather warnings was necessary to round out the picture and the importance of this activity was made plain to the President. Fully to assume the government's financial responsibility according to the brief left with the President by this delegation, calls for increases totaling \$845,000 for all fire protection items.

General Herbert N. Lord, Director of the Bureau of Budget was present at the conference. He told the delegation that they had touched a vulnerable spot in the mention of failure to coordinate federal fire protection activities. "We are working on this," he said, "but have not yet found the solution." General Lord also commented upon the timeliness of the conference and said that Chief Forester Greeley was now before the Bureau for decision on the forestry items.

## Ancient Ideas in Modern Woodwork

*(Continued from Page 667)*

dovetails cut in the two woods to be joined together, the tenon in one fitting into the mortise in the other. But the Egyptian cut mortises in both planks and made a double dovetail of a third piece and fitted it into the mortises. That was probably the only method of dovetailing planks edge to edge and making a joint strong enough to hold. The boat-builder used dovetails a hundred times larger than those commonly used now. Egypt was a land where colossal works were common, and the carpenter who cut and fitted dovetails in boat planks was imbued with the

idea of bigness, and the scale of his dovetailing is enough to amaze a modern workman.

Aside from the enormous size, and the three-piece joinery of the Egyptian ship carpenter, there is no difference between it and that of the modern furniture maker's work when he constructs a drawer for a chiffonier or the box maker's who provides dovetailed shipping cases for starch or coffee. The Egyptian had the idea four thousand years ago, and it has not been much improved or modified since.

### Our Cover Insert Mill and Mountain

This photograph of the sawmill plant of the Earnest Dolge Lumber Company at Tacoma is suggestive of the intimate relation between the lumber industry and the wilderness, and was chosen especially for use on the cover of our "Industrial Number." So far this country has had to leave the making of lumber substance to the bounty of Nature.

The lumber industry in America is as dependent on wild timber as the fur industry on wild animals. Hitherto the wild has fed the industry, but with the coming of re-forestation the industry will feed the wilderness.

# Saxton Pope--An Appreciation

By PAUL FAIR

ONLY once in the bluest of blue moons does it come to pass that, purely through the love of the game and carried on solely by the vehicle of his enthusiasm, can an individual give widespread popularity to a sport.

The death of Dr. Saxton Pope, of San Francisco, marks the passing of this phase,—the individual and initial impetus,—of the renaissance of the ancient and all but moribund sport of archery. Only his friends will realize the keen personal quality of the regret that his passing occasions, but the work he has done in the last few years in championing archery as a sport will not pass with him. The boyish zeal with which he threw himself into the sport and the infectious charm with which he wrote and told of it will surely carry on the message, and enlist the sympathies and recruit the ranks of the ever growing company of bowmen. To Doctor Pope archery made a twofold appeal, as a game of skill and as a sporting proposition, a manner of hunting in which the hunter used a primitive weapon, dependent for its effectiveness solely upon his skill in shooting and his ability in huntercraft. The heavy handicap placed great odds against himself and in favor of the hunted animal. The modern rifle with its long range and flat trajectory was too easy, he thought. Quite naturally all this caught the fancy of the public. Archery heretofore had been regarded as a pastime to which young ladies' colleges had been addicted in a rather desultory fashion, shooting with light tackle at butts set up on a lawn. Here was a man who made it a real he-man's game. Using a yew bow, wrought with loving care from a bolt riven from a yew tree he had himself selected and felled, and with a pull of seventy-five pounds, he hunted and killed deer, black bear, cougar, and finally grizzlies.

The climax was reached when the newspapers announced, early in 1925, that Doctor Pope, in company with Arthur Young, a co-pioneer bowman, and Stewart Edward White were about to invade Africa with the avowed purpose of shooting lions with the broad

head arrow. The real purpose of the trip was lost in the spectacular aspect. Little or nothing was said about the hunt being regarded by Pope and Young simply in the light of an interesting experiment. They did not regard the bow as an effective substitute for the rifle in immediate deadliness. From their experience with American game they well knew that the arrow has little of the shocking power that is necessary to knock down the great African beasts, tough and tenacious of life as they are. These men, simply as good sportsmen, accepted the odds against them and the very real dangers. They won. They killed five lions, some of them charging, cleanly with arrows. That others had to be stopped with rifles in the last seconds of their charge did not, in the mind of Doctor Pope, materially affect the result of the experiment. He did not attempt to argue the case of the bow against the rifle, but was bent on trying to find out just what he could do with the bow against the most dangerous game, protected by the rifle if necessary in extremities. The extremities came, in plenty, and were much more real than if the rifle had been the artillery from the outset. That the charm of the hunt lies not in the killing may perhaps best be shown by quoting from his book, "Hunting with the Bow and Arrow": "And after all, there lies the soul of the sport. The fragrance of the earth, the deep purple valleys, the wooded mountain slopes, the clean sweet wind, the mysterious murmur of the tree tops, all call the hunter forth. When he hears the horn and the baying hound his heart leaps within him, he grasps his good yew bow, girds his quiver to his hip and enters a world of romance and adventure."\*\*\*

\*\*\*As an implement of the chase, to us it seems to hold a place unique for fairness. And in the further development of the wild game problem, where apparently large game preserves and refuges will be the order of the day, the bow is a more fitting weapon with which to slay a beast than a gun or any more powerful agent that may be invented.

\*\*\*All that we have done is perfectly possible to



SAXTON POPE  
Pioneer bow-man and  
big game hunter.

any youth, no matter what his age.

"May the gods grant us all space to carry a sturdy bow and wander through the forest glades to seek the bounding deer; to lie in the deep meadow grasses; to watch the flight of birds; to smell the fragrance of burning leaves; to cast an upward glance at the unobserved beauty of the moon. May they give us strength to draw the string to the cheek, the arrow to the barb and loose the flying shaft, so long as life

may last."

A clean sportsman and fine gentleman has passed. Salute!

(Attention is directed to the article, "Lions and Arrows," written by Dr. Pope especially for this magazine a brief time before his sudden death. It is a stirring account of the African trip to which Mr. Fair refers and was published in the October number. —Editor.)

## The Forest's Enemies in the Sea

*(Continued from Page 658)*

effective. Sheets of lead were also commonly used upon the ancient and medieval ships of the Mediterranean. The wooden sailing ships of the 18th and 19th centuries were often protected by sheets of copper on their under-water parts. The steel ship needs no protection from marine borers, but the great increase in commerce and in harbor works during recent years keeps the problem of wood protection ever before the shipping industry.

It is so important and so difficult of solution that committees of engineers and scientists have been formed in various countries from time to time since 1860 when the Dutch formed the Amsterdam Commission. Hundreds of thousands of dollars have been spent studying the habits of the borers and trying to develop satisfactory methods of making wood immune. The reports of these investigations fill volumes and a great quantity of useful information has been obtained, but still the problem is only partially solved.

With characteristic persistence, engineers and scientists continue doggedly at their task. The American Railway Engineering Association has a standing committee charged with the study of pile protection. The Chemical Warfare Service has an immense store of knowledge of poisonous chemicals and is now employing this wartime knowledge in the economic war against the marine borer. The Army, the Navy and the Lighthouse Service are all actively interested because of the damage which has been done to their structures and they are doing what they can to help find a solution. The National Research Council had until recently, a committee of prominent engineers and scientists which published a monumental volume of information on the subject and the San Francisco Bay Marine Piling Committee is now preparing a detailed report on studies which it has been making during the last five years on the Pacific Coast aspects of the problem. Similar committees and organizations are at work in other countries.

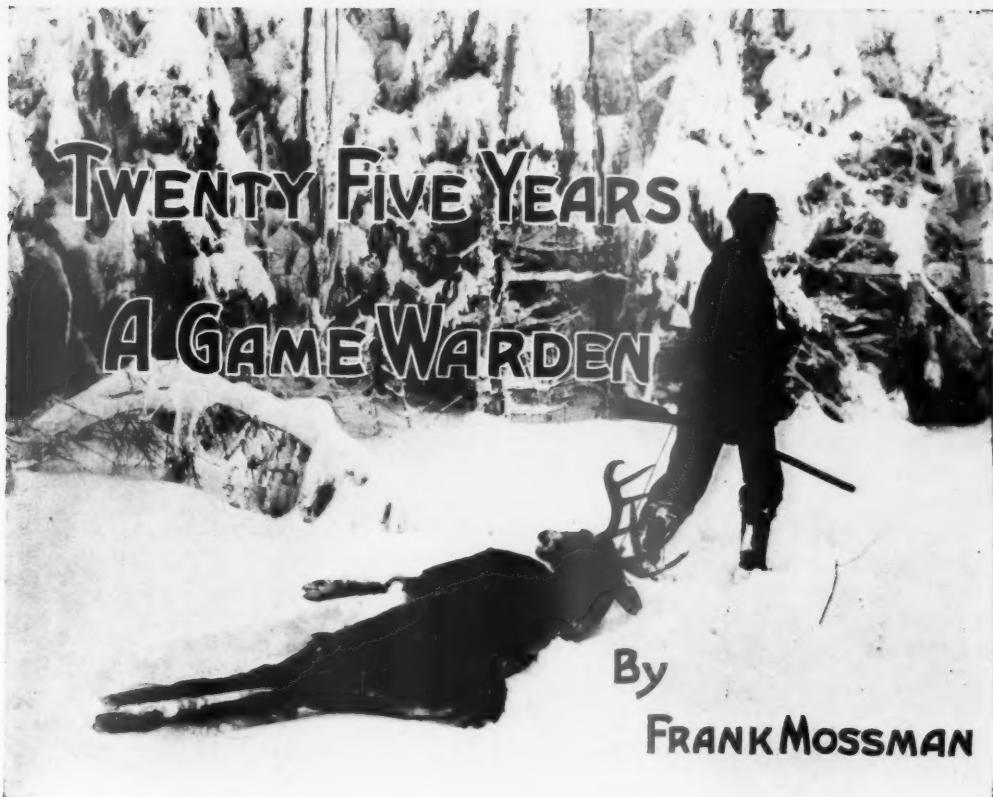
The United States Forest Products Laboratory has been making tests of the effectiveness of wood preservatives for many years and maintains test racks in the Gulf of Mexico upon which wood treated with new preservatives is placed from time to time to see what the borers will do to it. In this work the Lab-

oratory is assisted by two of the railroads of that region.

One of the many experiments tried at these places was to bore a  $1\frac{1}{2}$  inch hole lengthwise in a stick of wood to its center, put a quantity of dry poisonous powder, like corrosive sublimate, sugar of lead or sodium fluoride, in the hole and plug it up. The theory was that the water would dissolve the powder and distribute it through the wood and poison it so the borers could not live in it. The theory was all right, but the borers destroyed the specimens before the water could do its part. They bored right up to the cavity containing the poison and even destroyed the plugs used to stop up the hole.

Fortunately, although no entirely satisfactory protection has yet been devised, enough progress has been made to afford a reasonable degree of protection, otherwise wood could not be economically used in many harbors and other construction materials, much more expensive, would be required. A heavy injection of coal tar creosote is the best known treatment for piling and its value is recognized the world over. The protection it affords varies. Sometimes presumably well creosoted piling has been destroyed in as short a period as 6 or 8 years. In other cases it has remained in good condition for 30 years or more.

Metal or concrete sheathing has been used with some degree of success, and sometimes pipes of clay, concrete or metal are slipped down over the piling and the space between the wood and pipe filled with sand. These are quite expensive but they afford satisfactory protection as long as they remain unbroken. Various protective armors of pitch, rope, canvas, wood battens, and felt have been used and have afforded protection for a few years. Like other engineering problems difficult of solution, the marine borer problem has afforded a fertile field for inventors, and the number of preservatives or protective devices proposed has been legion. As is usual with inventions, very few of them have any value whatever, and many are absolutely ridiculous. Perhaps, in the future, some free-lance inventor may find the panacea. Who knows? The real hope of the future, however, lies in continued experiments and investigations by scientists and engineers and in building up defenses step by step in the light of the facts they discover.



## II. The Scalp Frauder of Bald Hills

WHEN I was game warden of Thurston County and lived at Olympia, Washington, I went one day, late in August, up to the State Capital to visit deputy State Auditor Hameison, and while in the office happened to glance over the stub voucher books which showed the amount of money paid out by the State each quarter for the scalps of predatory wild animals. Fifty thousand dollars had been appropriated by the last legislature to pay bounty on cougar, wild cats and coyotes. The purpose of the law, of course, was to encourage the destruction of these animals because of their menace to the stock and poultry of ranchers and farmers. The bounty on cats was five dollars and the law required that the killer of a cat, in order to get the bounty, must present the scalp and make oath that the animal had been killed not more than two months previously, in the county where the bounty was collected from the auditor. I knew about what a hunter and trained dogs could account for in a given time and place and I was sure that a fraud was afoot to steal the bounty funds. Signatures of the men who had signed the vouchers were compared and one man's handwriting appeared in twenty counties of the State. Word was sent to the various counties telling them to refuse to make payments on more than three or four scalps at a time while the matter was hanging fire.

I hurried downstairs to Governor Albert Mead's office. The usual crowd of political pie hunters were

sitting around waiting to see the Governor. I sent word to the Governor and in a few minutes I was informing him that the State was being robbed. The Governor said he would put the Pinkertons or some good detective force on the case. I said, "Now, Governor, you know you will have to get a specially trained detective to secure evidence to convict in court."

Several weeks passed and again I was called to the Capital and to the Governor's office. The Governor and Attorney General Atkinson were there. The Attorney General passed me a bulky manuscript, which proved to be a detailed report to the Governor of the operations and daily investigations of a Seattle detective in relation to the scalp frauds. He reported that in several counties men had come into the auditor's offices to collect bounties on from 38 to 56 wild cats' scalps at five dollars a scalp. In Seattle one man came in with 140 scalps, swore he had killed the animals, received the county warrant and departed. No action had been taken.

The Governor said, "Frank, what do you think of that for the report of a twenty-five dollar a day detective?"

I said, "I think it is a waste of money. You will recall I said you would have to get a specially trained detective. I'll bet this one never saw a wildcat in his life and I'll bet he couldn't tell a winter killed cat from a summer one."

The Governor said, "Where will I get a specially trained one?"

I replied, "He is right here now and guarantees to catch the scalp frauders."

I applied for a leave of absence for one month, and the Governor gave me necessary papers to act for his office in the matter. I looked over the books in the county and found that a great number of skins had been brought in three times, about a month apart. I told the auditor next time the man appeared to call me in. An old wild cat hunter or an expert fur dealer knows in most cases by the pellage of the skin or scalp, whether the animal was killed in summer or winter, and can often identify the parts of the United States in which the animals were killed, by the condition of the coats. Auditor's don't know these things, or detectives, either.

As I was preparing to leave town I got word to come to the auditor's office. Just as I passed in a big two hundred pound man with a white hat and blonde beard came out. The auditor ran to a table and picked up a bundle of scalps, seventy-one, in fact. He said, "Frank, look at these, are they all right?"

I examined them and said, "No, they are all frauds."

The auditor and the office girls became so excited that I was afraid the big man would return suddenly, become suspicious and refuse to sign the voucher, under oath, and I wouldn't have him where I wanted him. He was to come back at one o'clock and it was now eleven thirty. The auditor and girls, when I left, looked as if they expected him to come back immediately with a six-gun in each hand. I met Detective Burnet and told him to locate the big man and not lose him. The auditor had called the County Attorney and the Attorney called his friend the Sheriff, Tom Connely, who started out to make the arrest on his own hook. When it was almost one o'clock and I went back to the office, a half dozen people were standing around watching the door, in a very nervous manner. The Sheriff had come back without his man. I got the old wild cat pelts and sat grinning and kidding the Sheriff for sweating so much.

Suddenly the door opened and in walked our big, white-hatted scalp frauder, with a suspicious bulge under his left arm pit, showing he was armed.

He said, "I have come to collect for the scalps."

The auditor asked in what part of the county he had killed the cats. He replied that they came from Bald Hills, up the Nisqually River. When he said that, I knew he was a goner, because I knew every cat, hound and hunter up there and they had killed five cats last year.

Just as the man was going to sign his sworn statement, the auditor said in a warning voice, "If you sign that you want to be sure it is true." The scalper looked around, saw the excited bunch, refused to sign, and walked out with his pelts, the sheriff right behind him. I waited for a few minutes, supposing the sheriff

had made the arrest and then went out and saw the sheriff at his desk. I said, "Tom, hold that man until I get through with him." The sheriff didn't have him to hold, so I ran out, and up the street toward the depot. The frauder was on his guard now, and was going as fast as he could, pretending to hail one of the many persons going to the train, across the street. I got near him and jammed a six gun under his shoulder blades and told him to put his hands up. I took his gun, and started him back toward the court house. I delivered George Wright, as he called himself, at the county jail and told the sheriff to hold him for me.

Now there had been a law enacted making the offense of scalp frauding a misdemeanor, and this law and some jealous officers were to make a lot of trouble for me. No one knew at this time, except the Governor and the Attorney General, that I was acting as the Governor's agent. I went to the Governor, and he was angry to think that the Sheriff had tried to supersede me and had done nothing, but I told him they were in the dark as to my acting for him. I went up into the Bald Hills to get some of the residents to prove that not half a dozen wild cats had been killed in a year in that part of the country. After two days I returned to Olympia and learned, to my astonishment, that the scalp man had been bailed out that day at noon by a beautiful woman, who had pledged money and diamonds. Wright had of course agreed to come back to Olympia a week later for a hearing.

As the day approached for Wright's hearing, I was sure he would not dare to come, so I set out to find him, if possible. I went to Tacoma and described Wright, and Howell there, recognized him as Mr. Cook. He had gotten about \$2,000 from this county and was looked upon as a mighty hunter around the court house—he was, all right, but for State money.

Then I went to Seattle. I found that Wright, under the name of George Casey, had collected \$400 there that morning for fraud scalps, although a warning had been sent to this office at my request. I showed my credentials and commenced to range the town with two plain clothes men, searching for the nervy man with the flowing blonde mustache. We went into a restaurant and joked about the frauder, and the men left me with Henry Reif, game warden of King County, who just happened along. We paraded down to Sixth Avenue—me with a sixty dollar overcoat on my arm. I didn't keep it long. I saw my man—though he had his mustache shaved and wore a different suit. He was on the other side of the street, so I ran over and the chase started. Wright turned and ran up the hill, knocking women, baby carriages and men in his run up the street. He ran into Senator Palmer (who afterwards passed some legislation against frauders) and then I catapaulted into the Senator, knocking him down. Near the corner, Wright drew a log barreled

derringer and still running, partly turned—to shoot me. I drew my gun also, a woman screamed, and just then Wright ran into a large fire hydrant on the edge of the pavement. He fell headlong, and I ran up and kicked the gun out of his hand. It went off with the roar of a small cannon. I got one handcuff on, but in the struggle couldn't get his other hand, so I jammed a gun in his middle to keep him quiet. It was twenty minutes before the police pushed their way into where I held Wright in the door of a drug store. The first policemen who got near, told me to drop my gun. I said, "Not by a darn sight, I'm a State officer."

I cuffed Wright, and started to lead him to the jail when I thought of my sixty dollar overcoat, but my police friends couldn't find a trace of it. I booked Wright to Sheriff Smith, searched him, and found several thousand dollars, also tickets for the *Takashu Maru*, sailing for Japan that night.

I called up the Governor and gave him all the details I cared to over a public phone. The Governor told me to stand pat and hang onto the stolen money and he would arrange for me to be looked after so that no tricks would be played. I therefore centered my efforts on getting evidence in the case, and from that time on, two men guarded me day and night.

That night a constable came and attempted to serve a writ on me, by the scalp frauder's attorneys, to secure the stolen money. The guards repulsed them and they called in a policeman. He refused to act, so they gave it up. Next day I took the money to Olympia, turned it over to the Governor and got his receipt.

When I went up to Seattle I had another surprise. I found that Wright, alias Cook, had been taken into Court the day before, had plead guilty on eight counts, had been fined \$800 and costs and had then been turned over to the Olympia sheriff, who wanted to make good. Wright and I had passed on opposite trains—he going to Olympia from whence I had come.

I hired a fast livery team to Tacoma, then secured a fresh team and was back in Olympia at daylight. I went to the Governor and he gave me detailed orders—I was to guard the main evidence from even the county attorney and was not to lose sight of Wright.

That afternoon Wright was brought into Court. Tommy Vance, formerly Attorney General for the State, was one of Wright's attorneys and as I came down the hall he was talking to the beautiful woman. The Attorney introduced her as Wright's wife and left us. I waited for the vamp scene to come. Tears ran down the woman's face, she begged me to stop any further efforts in the case, grasped me so I could not escape and shed tears on my chest. I thought, "No wonder they fell for this woman—I'm darn near falling myself," when she said, "I will pay your price if you drop this case."

I left, and went into the justice court. Wright sat with a golden haired child of four years on his lap, head bowed, and tears in his eyes. The woman came

in sobbing, and I noticed she arranged her chair so that the justice could get an eyeful of most all the charms she had to display. The child was hired for the occasion, we learned later.

One charge was read that afternoon. Wright pleaded guilty, was fined \$100 and the woman paid the fine. Then they started to leave the courtroom, thinking that Wright was free. I stopped him in the hallway, with a felony warrant, instead of a misdemeanor charge, rushed him to a steamer leaving for Tacoma—while the astonished crowd in the courthouse was recovering their breath. Whatcomb County was Governor Mead's home county, he had been county attorney there, and it was there that I took my prisoner.

Wright gathered together a staff of the most brilliant legal advisers ever collected in the State, for the final scene of his fraud career, and a five days' trial was held. The strain of collecting the evidence was exhausting, and we nearly collapsed. We had to contend with private detectives, be damned by jealous officers and withstand attacks by several bought newspapers who endeavored to create sympathy for Wright.

We had express receipts and letters from big fur farms where Wright had bought the furs from a dozen different states. We showed the hides in all seasons, and proved the 500 hides sold in Whatcomb County were frauds, being winter hides which Wright swore he killed in summer. At one time, according to express receipts in our possession, Wright had got 800 wild cat skins for an average of fifty cents each for every one of which he collected a five dollar bounty. We explained in detail the growth of cat fur in each stage and season and a whole day was spent in cross-examining on this point, by Wright's attorney. A chain of evidence, with every link complete, blasted the hopes of the frauder's attorneys.

As the jury went out a Bellingham society woman came to Wright, who sat with his attorneys, and gave him a beautiful bouquet of flowers. She then came to me and said, "I hope Mr. Wright gets free—it is so romantic and daring to have stolen all that money from a rich state and in the eleventh hour get caught."

Wright's hired "scenery" sat in the courtroom with tears streaming down her cheeks and the golden haired girl on her lap clutching Wright's hand. The spectators looked at me as if I was a yellow dog to drag such a lovely family into court. The State had her barred from the Whatcomb County court room in the tense closing days of this trial.

When the evidence was in, the jury was out just fifteen minutes. They handed in a verdict of guilty and a few days later Wright was sentenced to five years at hard labor. The money in possession of the state was declared stolen state money in a later hearing.

So, justice ruled, in spite of jealous officers, poor laws, beautiful women, private detectives, and clever attorneys, all mixed together like raisins in a cake.



### Two Thousand Years Ago

A crippled Italian logger employed about the station at Fort Bragg, California, was watching the forester load some redwood seedlings.

"Watta you do da trees?" he asked.

"Shipping 'em down to a fellow who will plant 'em in the hills."

"I tella you how to planta dem trees. Las' time you planta dem trees you no getta good layout for dem trees. Fall dem trees on da rough groun', break all to h—ll. Dis time you planta dem trees in da right place."

### Perhaps It Was "Dennis"

We notice where a man by the name of Bezinslatowskiew was struck by lightning. We didn't hear what his name was before he was struck by lightning.—*Dechutes (Oregon) Pine Echoes*.

### Passes the Buck

When Rt. Rev. Peter Trimble Rowe, Episcopal bishop of Alaska, goes mushing over the snowy wastes he often gets extremely tired, cold and hungry, and wants very much to swear; but he never forgets that he is a bishop.

However, he has a way out. He waylays the first man he meets and asks him how the trail is. The man invariably replies that the trail is the blankety-blankest son of something of a trail that he ever saw. The bishop smiles, sighs, asks him to repeat it, then says "amen" and goes on.—*Missoula Sentinel*.

### May Need It

Ranger Vibert has notified us that Patrolman Starkovitch misplaced his collar bone and expects to be out of the hospital the last of the month. We are sorry for Joe, but hope that he finds his misplaced collar bone before he gets back on the job.—*The Smoke Screen*.

### Safety First

A traveling salesman, driving over a strange road into West Baden, Indiana, late at night recently, halted his car suddenly at a road sign, saying, "Stop." Then just in front of him there moved across

the road a family party of skunks, including father, mother and three children. Now the salesman wonders if skunks can read.—*Butte Daily Post*.

### Or Sat Near One in a Meeting?

"What becomes of all the brown autumn leaves?"

"Haven't you ever smoked a five-cent cigar?"

—(Forestry Dept.) *Maryland News-Letter*.

### Perhaps He Was Going Fishing

Two elderly men, both extremely deaf met on a country road. Dave had a fishing pole in his wagon. When he saw his friend, Jim, he stopped the horse. "Goin' fishin'?" shouted Jim.

"No," Dave replied. "I'm goin' fishin'."

"Oh," said Jim, "I thought mebbe you was goin' fishin'."—*The Open Road*.

### Yes He Has No Job

A Finn was walking down the road. He met a friend who told him that he could get a job which he returned.

"Did you get the job?" asked his friend.

"I told him for a job and he asked me no," said the Finn.

### According to Our Observation

On conservation we need deep consideration and more education so that expectation will result in realization.—*Pacific Sportsman*.

### Immigration Note

EUROPEAN NUTS TO BE IMPORTED ONLY UNDER PERMIT.—Headline on Department of Agriculture *News-Letter*.

### Where He Learned It

The sins of the jaybird are that he eats eggs and makes too much noise with his mouth. Let the man who is innocent cast the first stone. —*Washington Post*.

### "H" for "Helpful"

The class in surveying had been divided into 4-man parties for practice in surveying around obstacles. "H" was clearly still indisposed after a big night.

H.: "Well, fellows, I want to do my share, but you see how I'm fixed."

Party leader: "Well, you just crawl under a bush and rest, we'll get along somehow."

H.: "No, I want to help. I'll tell you. I'll be the obstacle."

# "Chug-Chug"

"I GUESS I'm burned out this time," panted the owner of the Lee Ranch near Quincy, Plumas County, California, as a crown fire in young pine roared on toward his buildings.

It was late in July last summer and the rancher was getting his breath after a hard fight to keep some flying embers off the barn.

"Fifty men on the way down," shouted the logging boss who had seen the fire from the mountain, and he rushed on for a size-up of the situation. The wind had veered enough to restore the courage of the neighbors who were trying to save the house.

Then above the roar of the flames came the rumble of a big red Forest Service fire truck. Thank heaven! In its equipment was a gasoline motor pump and ample lengths of hose. It was the work of but a moment to dam up the small irrigation ditch. Almost as quickly came a "chug-chug—chug-chug" and a good stream was playing on the house and sheds.

Meanwhile the loggers, passers-by, forest rangers and neighbors had given good account of themselves. In an hour the ranch was safe.

"She's hooked," called the logging boss happily, as he rubbed his smoke-blinded eyes. "Yes," shouted the rancher, "but if it hadn't been for this little pump I'd be camping outside tonight. Two more minutes and she'd 'a got me."

Yes, it happened just about that way.

A month later in the rugged canyon of Skagit River in Northern Washington a man with torn clothes laboriously climbed a tree, hung on, and

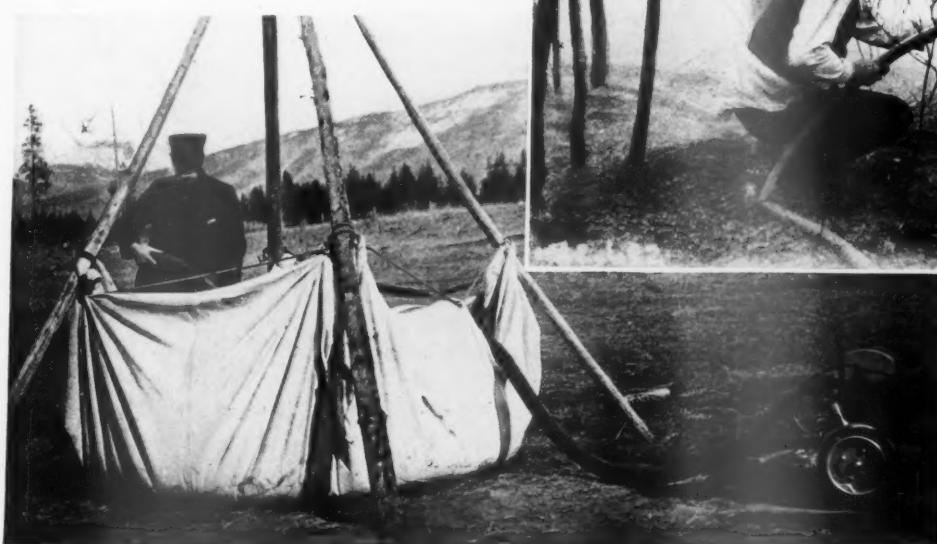
trained a hose nozzle strapped to a long pole against a high flaming cedar snag. This part of the fire had to be squelched or days of trouble were ahead higher on the slope. Again the little pump started its "chug-chug" just in time.

And so it goes from New England to the great Northwest along the Sierra Range or in the southern pines. Courage stiffens with the "chug-chug" of the what the rangers call "that fire-fightin' fool" the motor pump.

A case is known where a pump was kept in operation for 140 hours, 16 hours of which was without stop of any kind. A single unit is said to be equal to the shovel work of 30 men, if skillfully handled.

The distance to which water may be forced is hard to believe when one considers that these pumps are light enough to be carried on the back of a man. One pump is reported to have forced water for a period of three hours through 6,600 feet of hose.

Instances are also on record where water has been relayed from one level to another and to greater distances by series of pumps and judiciously located canvas storage tanks.



A CANVAS RELAY WATER TANK

The water is lifted and forced as far as possible by one pump, stored in this temporary canvas tank, sucked up by the next pump and relayed to another tank or to the scene of the fire.

## BETTER THAN A SHOVEL

This man may be excused for disordered appearance when it is remembered that he and the pump and hose are replacing several men with shovels.

The best known type of pump is designed to force a stream through a maximum of 7,000 feet of hose, to be carried by one man and to lift water 22 feet. It is produced on a sufficiently large scale to enable the manufacturers to carry interchangeable spare parts always

in stock and ready for use.

More and more, portable motor pumps are finding their way into standard forest fire-fighting equipment. They have proven their usefulness in the control of fires which never could be put out otherwise, except by rain.

## Who's Who Among Our Officers

WILLIAM B. GREELEY, *Director*

THE profession of forestry owes a debt of gratitude to one William Buckhout of Pennsylvania for influencing his nephew, William B. Greeley, in the choice of a career. Buckhout had been a close friend of early leaders in forest conservation in Pennsylvania and advised the profession of forestry. So, upon graduating from the University of California, Greeley after a year of teaching in Alameda High School to replenish his bank account, entered Yale for two years of intensive forest study. He graduated with the degree of Master of Forestry in 1904 and entered the United States Forest Service as a forest assistant in that year. His first assignment was a technical study of the important southern hardwoods. In 1905 he was assigned to administrative work on the National Forests, filling successively the positions of timber sale inspector in California, supervisor of the Sequoia National Forest and District Forester in charge of the National Forests in Montana and northern Idaho. That year he took over the administration of the 29,000,000 acres of National Forests in that district and in 1910 directed the fight on the great forest fires in that region. In 1911 Greeley was called to Washington, this time to become Assistant Forester in charge of the branch of Forest Management including silviculture—a branch which has supervision of the timber sales, timber and fire trespass, reforestation, and cooperative work with State and private owners in promoting fire

protection. In 1920, upon the recommendation of the resigning Chief Forester, Colonel Henry S. Graves, Greeley was chosen as his successor and has served in that capacity until the present day.

Immediately after the declaration of war against Germany in 1917, Mr. Greeley's time was devoted actively to organizing war purchases of lumber and recruiting forester regiments for work overseas. From August, 1917, until July, 1919, he was on duty with the American Expeditionary Forces first as Major and later as Lieutenant Colonel of Engineers. He largely organized forestry operations of the American Engineer troops in France and during his last year with the American Army was chief of the Forestry Section. This duty involved the direction of 21,000 forestry troops and 95 timber cutting operations in France. For his splendid services at this time, Colonel Greeley was awarded by the United States the Distinguished Service Medal, France made him a chevalier of the Legion of Honor and England awarded him the Distinguished Service Order.

Colonel Greeley is the author of a number of bulletins and popular and technical articles on forestry and forest economies. He is a director of The American Forestry Association, a Fellow of the Society of American Foresters, member of the Washington Academy of Sciences and Lieutenant Colonel of Engineers in the Officers' Reserve Corps.

## Forest Tax Amendments

CITIZENS of California, Washington and Minnesota will have an opportunity on November 2 to express their interest in forestry in a way that goes to the very heart of forest progress in this country.

It is none other than by the ballot. Approval of amendments to the constitutions of each of these states, providing for more equitable methods of taxing young growing timber, will be submitted for referendum vote

(Continued on Page 690)



WILLIAM B. GREELEY

# PACIFIC

WEIGH ONLY

**70**  
POUNDS



## PORTABLE FIRE FIGHTING

## PUMPERS

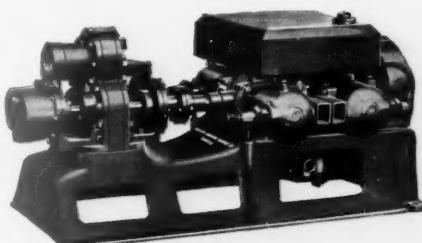
Pump more than 35 gallons per minute. Working pressures 150 pounds or better. **NO VIBRATION.** Elimination of vibration means long life to all wearing parts.

"We have one fire near Kalispel, on which we have ten pumps. They are stepping the water through runs of 1500 feet of hose from one pump to another five times, delivering the water at the fire about a mile and a half from the source of supply."—U. S. Forest Service.

"The 16 Pacific Pumpers used by our various organizations are giving us most excellent service. One of the first pumps we purchased from you for our Columbia unit ran approximately 550 hours during two seasons before overhauling was necessary. This was very much better service than we ever expected to receive from any of these units."—C. C. Scott, Secretary, Tillamook County Fire Patrol Association, Portland, Oregon.

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fire fighting.

Also satisfactory  
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BARBER & ROSS, INC.  
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THE PACIFIC TYPE "B" OR TYPE "N" PUMPER complete forms a well-balanced, light weight pack, easily transported by one man. The load is so arranged as to equally distribute the weight while carrying.

## Forest Tax Amendments

(Continued from Page 648)

of the people. The familiar principle of deferred taxes on immature forests is common to all three amendments. If passed, they will clear the way for the enactment of state laws which in each case would put into effect the principle of taxing forest land devoted to reforestation by the levy of a nominal annual tax on the land and a yield tax on the timber when it is cut, or when it becomes of commercial size.

It is to be hoped that the voters of these states will seize the opportunity to advance reforestation within their respective states. Present methods of taxing young growing forests which prevail in most of our states

rank almost shoulder to shoulder with forest fire in discouraging timberland owners from reforesting cut-over lands. They lay upon the owner the burden of annual charges on young forests over long periods and the hazard of losing through the ravages of fire, insects and other destructive agencies, both his crop and prepaid taxes on it before it is saleable.

There is only one way to remove this barrier, and that is through the ballot. Every user of wood and forests has a responsibility to do his part to provide equitable forest laws. Here is a chance for him to discharge a portion of it and he should be eager to act.

## A View of the Woods from Within

(Continued from Page 646)

national consciousness with the idea that forests are as essential a part of national land economy as agriculture. We should erase the old idea that forests are merely a transient use of land which must sooner or later be surrendered to agriculture and pasture. For these reasons, and others that are familiar to the readers of this magazine, forestry in America cannot be a matter of drifting, even though new forests of a sort are chiefly a matter of preventing and suppressing forest fires. We must build up national policies that will foster the forests. We must have scientific research that will show us how to turn all the physical waste of logging and sawing into the highest possible form of economic value. We must convey to the public the sound idea that forest utilization, instead of

being forest depletion, is forest reconstruction; and we must hold back the great horde of fallacious and gratuitous teachers who are building up propaganda of forest disuse under the guise of forest conservation that there may be greater and more profitable use for new and adventitious substitutes for wood.

At the moment, the organized lumber industry, itself, is undertaking, in the familiar guise of trade extension, what is fundamentally a policy of forest regeneration. It is energetically seeking to stabilize the demand for and prudent use of the primary and secondary products of its forests. Silviculture is essentially dependent upon the profitable marketing of its products. The forest industries' outlets must run full or there will be no incentive to fill the reservoirs.

## An Old Time Turkey Hunt

(Continued from Page 688)

house, and you will not be astonished to know that the sound of the drum is never heard there, and that, unless on the 4th of July, the glorious anniversary of our independence, we never see either soldiers, or uniforms, or bayonets."

During the whole time of our return journey I was absorbed in deep reflection. Perhaps it may be thought that I was meditating on the last allocution of Mr. Bulow; but I was thinking on something quite different; namely, how I should get my turkey cooked. I felt quite embarrassed, being afraid that I should not find at Hartford all that I could have desired, because I wished to raise a trophy to my skill in displaying my *spolia opima* to advantage.

I make a painful sacrifice in suppressing the details of the great work of which the purpose was to give a dinner in good style, to which I had invited several American friends. Suffice it to say, that the wings of the partridge were served *en papillote*, and

that the grey squirrels were stewed in Madeira.

As for the turkey, which was the only roast we had, it was charming to look upon, delightful to smell, and delicious to taste; and so, until the last morsel was eaten, you could hear all around the table, "Very good; exceedingly good!" "Oh, my dear sir, what a glorious bit!"

\*The flesh of the wild turkey has more colour and more flavour than that of the domestic turkey.

I have heard with pleasure that my estimable colleague, M. Bosc, has shot some in Carolina, which he found excellent, and, above all, much finer than those we rear in Europe. He recommends, therefore, that all turkeys that are reared should have as much liberty as possible, that they should be taken out into the fields, and even into the woods, to increase their flavour, and to bring them as much as possible nearer to the original species ("Annales d'Agriculture," part of 28th February, 1821).

# What do the Scales show about the Lumber in your CRATES?



IN DOZENS of packing rooms today hundreds of dollars are leaking away in excess freight charges. Unnecessary waste due to heavy crating woods.

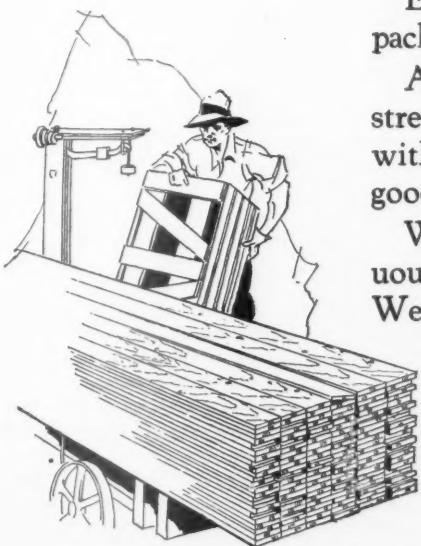
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Mention AMERICAN FORESTS AND FOREST LIFE—It Helps



# AROUND THE STATES WITH THE AMERICAN FORESTRY ASSOCIATION

## Conservation Week at the Sesqui-centennial

President George D. Pratt addressed the Forestry Day Meeting in the Pennsylvania Building at the Sesquicentennial Exposition in Philadelphia in September on "The Work Ahead in Forestry." This week's activities were arranged by the Department of Forests and Waters. Addresses were also made by Charles Lathrop Pack of the American Tree Association and by Paul G. Redington, Assistant Forester in the Forest Service at Washington.

## Mississippi Starts Forestry Work in Public Schools

Without delay, State Forester Roy L. Hogue has arranged to get the public school forestry provision of the Mississippi Forestry Law into action. Mrs. Daisy Priscilla Edgerton who has been assistant editor in the Department of Agriculture has been secured as State Supervisor of forestry in the schools and will bring to the work just the experience needed. Besides teaching experience, Mrs. Edgerton has conducted special school work in forestry in South Carolina.

## Forest Nurseries Expand

Maryland, Iowa and Wisconsin are expanding their forest nurseries for the purpose of filling increased demand for planting stock under the cooperative tree and seed distribution clause of the Clarke-McNary Act. Idaho will follow their example next year.

## New York Has Heavy Fall Tree Planting Season

Reforestation in New York State will use more than 5,000,000 trees according to word from the Conservation Commission. Planting on the State forest preserve will absorb 3,000,000 trees and there are an

unusual number of calls for stock to start community forests.

In addition to the stock which is being raised by industrial concerns, more than 2,000,000 trees are being supplied by the state to these firms for the establishment of commercial forests. Included in the fall planting of the Conservation Commission on the forest reserve will be a 10,000 tree forest in memory of Gene Stratton-Porter, novelist and lover of trees.

## R. B. Miller Organizes Illinois Forestry Work

R. B. Miller, recently appointed Chief Forester under the new Illinois Department of Conservation with headquarters at Springfield, is busy planning the forestry program for the state which will include the acquisition of some forest areas for State Forests and probably the establishment of a forest nursery and a fire protection system. According to Mr. Miller, Illinois has around 350,000 acres in need of protection from forest fire.

## Proceedings of the World Forestry Congress

The International Institute of Agriculture announces that the proceedings of the World Forestry Congress at Rome, April 29 to May 5, 1926, will be published by it before the end of the present year. The proceedings will include some three hundred reports submitted to the Congress, and will form five octavo volumes of about 3500 pages.

Prices of the complete works are as follows: Members and Associate Members, 175 lire; advanced orders booked before Nov. 30, 1926, 250 lire; subsequent orders, 300 lire. Payment will be accepted in American money according to the current rate of exchange, now about

25 lire to the dollar. Orders should be placed with the Publications Office, International Institute of Agriculture, Villa Umberto I, Rome, Italy.

A list of the reports to be included in the proceedings can be obtained either from the Institute or from S. T. Dana, Chairman, Committee on International Relations in Forestry, Amherst, Massachusetts.

## Louisiana Amends General Conservation Law

Lumber and naval stores operators in Louisiana must now leave at least two unbled seed trees per acre on every ten-acre plot worked, according to an act signed by the Governor recently. Formerly the law required only one tree per acre for every section of land. A seed tree is defined as "a healthy tree of the species being cut or bled, not less than 10 inches in diameter, 4½ feet from the ground."

## Georgia Takes On Two More Foresters

Alfred Akerman of the Virginia Forestry Department and E. W. Hadley of the Southern Forest Experiment Station, have been chosen by the Georgia State Board of Forestry to take charge respectively of the new departments of forest management and forest protection.

## Another Redwood Grove

Another grove of California Redwoods on the Redwood Highway 250 miles north of San Francisco has just been deeded to the State of California by Mrs. Kate Felton Neilson of San Francisco in memory of her father, the late United States Senator Charles N. Felton. The gift was made through the Save-the-Redwoods League to the State Forestry Board.

The tract, which is one of the most beautiful groves in the vicinity of the

Dyerville-Bull Creek area, contains approximately 100 acres and over seven million feet of Redwood timber. It occupies a point of land situated in a picturesque bend in the South Fork of the Eel River, an ideal site for a memorial park. It lies across the river from Bolling Grove, another memorial, dedicated several years ago to Colonel Raynal C. Bolling, the first American officer of high rank to fall under fire in the world war.

#### State Foresters Meet at Baltimore

Opening with a formal meeting at the Southern Hotel in Baltimore on October 11, The Association of State Foresters spent a busy week with State Forester Besley of Maryland and his assistants.

An excursion to the Eastern Shore for a view of the railroad safety strips required by the state law to prevent fires, and to witness three forestry demonstrations in Dorchester County, marked the second day. On the fourteenth a number of lookout towers and state forests were visited along with places of historic interest in which the State abounds.

The visitors were particularly interested in the recreational developments on the Patapsco State Forest and in a four-acre walnut grove from nuts planted in 1893.

The last two days of the meeting were spent in Washington and given over to formal and individual conferences on work under the Clarke-McNary Law with the U. S. Forest Service. The Washington Section of the Society of American Foresters entertained the group on Friday evening at the Women's University Club.

#### Indian Chief Warns Against Forest Fires

Written in the language of the Algonquins, the following notice by Chief Tenascon might be seen in northern Quebec last season:

"My dear children and well beloved: I beg of you this season, you who are always in the woods, if you see a fire to put it out if possible, and, if you cannot put it out yourselves, notify at once the forest rangers. Do not smoke while traveling through the forest. You know yourselves what else you should do. (Signed) Louis Tenascon."

#### French Forests Pay Dividends

According to a recent Associated Press dispatch from France, Americans who weary of the way their local taxes keep rising may well envy the Alsations who inhabit the three valleys that run up into the Vosges. A dozen villages own the timber-covered mountain sides which surround them. Revenue from the forests pays all community expenses, including those of the village church.

What is left over is distributed annually among the citizens—at about the same time when the villagers in less fortunate parts of France are digging down into their savings to pay the tax collector.

## Forest Service Steel Towers

This illustration shows a galvanized steel tower erected by the U. S. Forest Service on Promontory Butte, Sitgreaves National Forest, Arizona.

The tower, which is 110 feet high to the floor of the house, was designed and made by Aermotor Co., Chicago.

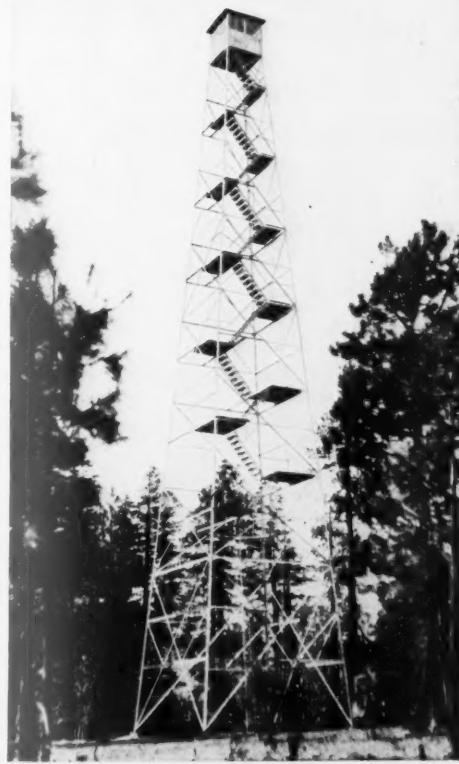
The well guarded stairs and the frequent landings make this high tower safe and easy for any one to climb.

The Aermotor Co. makes the best types of towers for forest protection and other purposes.

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Photo, by R. E. Marsh, courtesy U. S. Forest Service.

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TO OPERATE: Fill tank with water or any fire fighting solution. Carry the tank on the back like a pack basket, by placing carrying straps over shoulders and under arms. Hold the brass pump cylinder Fig. 4 in one hand and with the other hand on the pump handle, easily work the pump handle back and forth, when the Fire Nozzle, Fig. 15, will throw a long distance stream in any direction desired.

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When you read a NEWSPAPER.  
When you go CAMPING or HUNTING.  
When you drive an AUTOMOBILE.  
When you ride on a TRAIN.  
When you go to the MOVIE.  
When you build a FIRE.

#### WHAT ARE YOU DOING TO HELP PERPETUATE THE FOREST?

YOU CAN HELP. It will take only a few minutes of your time. Urge your friends to become members of The American Forestry Association, which stands for the protection and perpetuation of American forests in a sane, conscientious way. It is the least you can do to HELP KEEP FORESTS OUTDOORS AND IN.

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TIMBER ESTIMATES AND VALUATION  
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Literature and propositions free on request

**Huber's Silver Fox Farm**  
BROOKS, WISCONSIN

**A Napoleon Willow for Central Park**

By A. W. CHADWICK

THE Schenectady County Historical Society, Schenectady, New York, aided in perpetuating the memory of Corsica's

In 1900 Ver Planck Colvin gave a cutting of the tree to Cuyler Reynolds, Albany City historian. Clarence E. Bennett



THE PLANTING OF THE NAPOLEON WILLOW WAS CONDUCTED BY THE HISTORICAL SOCIETY OF SCHENECTADY COUNTY

greatest son recently, when it planted a sprig of the historic Napoleon Willow in Central Park, with park officials assisting. The original tree from which the sapling was cut, grew at the tomb of Napoleon at St. Helena. In 1870, Justice Charles P. Daly of Albany, New York, visited St. Helena and obtained the cutting, which was first planted in New Jersey. Mrs. Ver Planck Colvin brought to Albany a slip of this tree which in turn became a tree of large size.

of this city, director of Americanization work in the Schenectady public schools, was recently made the recipient of a branch of this famous tree from the Albany society and after discussing the matter with C. D. Ogsbury of this city, secretary of the historical society and the trustees, the gift was accepted, brought here and planted. The ceremony was attended by representatives of various societies in Schenectady, and newspaper men who took motion pictures which were shown in theatres in New York.

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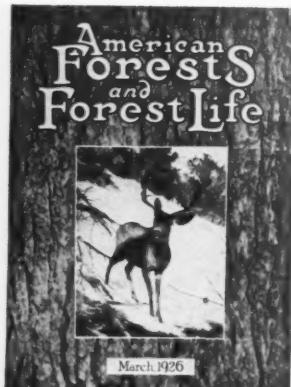
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November, 1926



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is fun and may be the most profitable end of a self-sustaining estate, or as a part of your farm enterprise. Wooded acres near the large cities are frequently ideal spots for the business—the ranch itself occupies little space. Let us suggest plans for your profit. Write to the

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QUALITY first, last and always, backed by rigid culling and scientific breeding, with results that five out of six national showings HERCULES SILVERS won the Alaskan Sweepstakes cup and numerous other ribbons.

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Fox Pens in the Forest at Boonville

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"THREE sisters cleared \$25,000 in a year," says the United States Department of Agriculture Bulletin 1151. This was a little unusual and extensive for amateurs. But you should know what others are doing from year to year.

An expert says he knows "no person with ordinary ability, perseverance and sound common sense who has started in the fox business and has not succeeded."

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Did you see the suggestion for planting little pines and rhododendrons around the fox pens in open ground, on your home place, which we published last month?

If not, let us send you free copies of the pictures and story. Also when you write we will send you gratis the same Government Bulletin which is a guide to fox raising. It tells the top price record in a year, after the war, for a silver fox pelt, which was produced by a member of this BUREAU.

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For smallest home or largest estate. Every home should have several.

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35¢ a Cake, \$1.00 for 3 Cakes  
Order now—This is the season.

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### Pennsylvania Prepared For Big Reforestation Season

An inventory of the forest tree nurseries operated by the State Department of Forests and Waters shows that more than 20,000,000 trees will be available for distribution this fall and next spring. This is more than twice the number that have ever been available at any time for reforestation work.

White pine leads among the trees that are available in the nurseries. Almost 6 million little white pine trees will be ready for shipment this fall and next spring. Scotch pine comes second with more than 4 million trees; red pine is third with almost 4 million; and Norway spruce is fourth with more than 2½ millions. More than one million each of pitch pine and European larch are ready for shipment. Among the other trees that will be shipped are red oak, black locust, yellow poplar, white ash, and American elm.

The planting of the 20 million trees during this fall and next spring will mean the reforestation of more than 20,000 acres of forest land. If given adequate protection and good care these planted trees when mature will produce about 700,000,000 board feet of lumber which is urgently needed by the industries and people of the State.

### Fined For Digging Trees

According to the Department of Forests and Waters, the new Pennsylvania law against pulling trees without the consent of the owner has resulted in numerous fines and arrests. The would-be purloiner of a Norway spruce planted three years ago was taken before the Justice of the Peace at Stroudsburg recently and fined \$25 and costs. Two Pittsburgh citizens were recently arrested in Bedford charged with pulling up pines on a nearby farm and held in \$1,000 bail.

### Iowa Young Folks Learn About Trees and Forestry

How many common trees in the woodlands do you know? What kind of wood will make the best "shiny-stick"? Can you cook beef steak over a fire without a frying pan and without smoking your eyes out? How old is a tree? What are "good-manners" in the out-of-doors? How can you use woodlands? What are they worth to the farm?

Boys and girls in Iowa are learning answers to some of these problems through forestry schools being conducted in their camps. From two schools held in the summer of 1923 to twenty-five schools held during the past summer is the record of growth made in this work. 1,400 boys and girls and over 100 adult leaders took the work this year, which was given in camps.

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Tiny insects become monsters while plant life reveals invisible mysteries and colors. American made, tilting stand and adjustable mirror. Two objective lenses that afford variable magnification from 100 to 250 diameters. Wollensak Microscopes are ideal for students and scientists. At your dealer or sent, postpaid, on receipt of price. Literature free on request.

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## BOOK REVIEWS

A NATION PLAN, by Cyrus Kehr. Published by The Oxford University Press, New York. Price \$5.00 Net.

In this book Mr. Kehr gives an exhaustive review of what has been done in local planning, and calls attention to the lack of coordination in the efforts of local agencies. Coordination, he believes, is necessary, if we are to develop a system of nation planning. Through a comprehensive study of the effect of town and city development on regions, of regional development on the nation, and even of national development on neighboring countries, he reaches the conclusion that plans for the future must start with the larger area and progress downward to the smaller one.

After a preliminary survey, the author ably discusses the obvious effects of national planning in stimulating wide general interest, in eliminating wasteful methods, and in accomplishing the more equal distribution of population and industries. The nation plan should not include city planning. The inspiration which nationwide improvements will have on local citizens should lead to the improvement of these smaller units.

The book is divided into four parts, part three taking up the greater portion of the volume. In it Mr. Kehr gives his definition of a Nation plan. He also considers the various means of communication, and points out how they may be developed to meet the contingencies of the future. He stresses the need for the coordination of highways, waterways, and railways, and points out methods by which transportation of the highest type may be provided for the public at the most reasonable rates.

The last chapter of the book is devoted to the planning of the National Capital. The author explains its inclusion by the fact that as the United States Capital it should be the expression of the ideal city, in both utility and beauty.

The book is characterized by thoughtfully selected illustrations, which, besides adding to the attractiveness of the volume, contribute much to the clearness of the text.

G. I. N.

FIELD MANUAL OF TREES, by John H. Schaffner. Published by R. G. Adams & Company, Columbus, Ohio. Price \$1.50.

This is a revision of a former manual published under the title "Trees of Ohio and Surrounding Territory." It is of convenient pocket size, and is designed for the use of those who wish to study native trees and the more common exotic species at any season of the year. Convenient keys to genera are given for trees in both summer and winter condition. Common names are freely used, along with the accepted botanical names. A complete index adds to the convenience of the volume.



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### New Quarantine For White Pine Blister Rust

A new quarantine measure involving the entire Continental United States on account of the white pine blister rust disease has been signed by the Acting Secretary of Agriculture. This quarantine which went into effect October 1, 1926, embodies the restrictions discussed at the public hearing before the Federal Horticultural Board June 30, 1925. It prohibits or restricts the movement of five-leafed (or white) pines and currant and gooseberry plants from any state, including the District of Columbia, superseding Federal plant quarantines No. 26 and 54.

The new quarantine is similar to Quarantine No. 26 in that it prohibits the movement of five-leafed pines from the eastern half of the United States to the western half. The dividing line is the western boundary of Minnesota, Iowa, Missouri, Arkansas, and Louisiana. Inspection and certification by the nursery inspector of the State of origin of shipment is required for the movement interstate of five-leafed pines and currant and gooseberry plants from any state not infected with the white pine blister rust. In addition, a permit from the nursery inspector of the state to which the shipment is consigned must accompany such shipment into any state having a legally established bluster rust control area.

The new measure, known as Quarantine 63, prohibits interstate movement of five-leafed pines. (1) From the New England States into any state except the six states comprising this group. (2) From New York into any other state. (3) From Minnesota and Wisconsin into any state except the two states comprising this group and the New England States and New York. (4) From Michigan, New Jersey, and Pennsylvania into any state except the three states comprising this group and the New England states, New York, Minnesota and Wisconsin. (5) From Washington into any other state. (6) From seven designated counties in northwestern Oregon into any state.

The new quarantine prohibits interstate movement of European black currant plants commonly known as cultivated black currants, except within the area comprised in the States of Alabama, Arkansas, Florida, Kansas, Louisiana, Mississippi, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas. Shipment of these plants must be accompanied by a state certificate of inspection.

The infected states and counties in which white pine blister rust is now known to be present are Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Washington and Wisconsin, and Clatsop, Columbia, Lincoln, Polk, Tillamook, Washington and Yamhill counties in Oregon.

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## West Coast Reviews Forest Fire Losses

From estimates furnished the Western Forestry and Conservation Association, a report of the past fire season on the Pacific coast has been issued showing heavy cost but not so great a loss as first expected. Destruction of felled timber, equipment and young growth on logged-over areas is more pronounced than loss of merchantable timber. The latter is estimated to cover less than one-tenth of one per cent of total stand in the five states of California, Oregon, Washington, Idaho and Montana. National Forest losses of merchantable timber were unusually heavy in northern Idaho and the federal expense was heaviest in this region. The edge is somewhat taken off the loss of merchantable timber on private land through the fact that its location will permit salvaging a large amount of killed timber.

There were 7,408 fires.

Merchantable timber more or less damaged is estimated at 522,100 acres, with a loss of 906,000,000 feet. Of this, 726,000,000 feet or 80 per cent, was Government timber and 180,000,000 feet or 20 per cent, private timber. Government damage is heavier largely because of bad lightning storms in remote regions where killed timber cannot be salvaged and because Congressional appropriations do not enable as full protective facilities.

Other potential forest land burned over is placed at 1,181,600 acres. This includes cutover land and old burns, also some brush and range territory of doubtful classification as true forest land. It is probable, however, that about two per cent of the five states' immature forest, from seedlings to advanced unmerchantable second-growth, was destroyed.

Loss of logs and equipment is estimated at \$749,700. Cost of fire suppression and protection to private, state and federal protective organizations was not less than \$4,750,000.

By states, these preliminary estimates give unsalvageable timber losses, including governmental, as:—California, 93,000,000 feet; Idaho, 173,600,000 feet; Oregon, 202,352,000 feet; Montana, 203,100,000 feet; Washington, 233,775,000 feet; total, 905,827,000 feet. Reforestation areas burned over:—Montana, 67,100 acres; Oregon, 157,400 acres; Idaho, 201,900 acres; Washington, 264,600 acres; California, 490,600 acres; total, 1,181,600 acres.

### A Correction

Through error the poem, "The Song of the Forester," by Don P. Bush, published in the August, 1926, number of American Forests and Forest Life, was credited to Amelia H. Lewis. Mr. Bush is a graduate of Pennsylvania State College and wrote this poem during the time he was a forestry student there.

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### Meriden Bird Club Establishes Memorial

With the purpose of establishing a memorial to Ernest Harold Baynes, founder of the Meriden Bird Sanctuary in New Hampshire, an appeal has been issued by the Meriden Bird Club for funds to maintain the sanctuary as a memorial to Mr. Baynes who was known as the spokesman of the birds. The treasurer of the fund is Charles Alden Tracy, Meriden, New Hampshire.

### More Forest Fires, Less Loss Per Fire

Although the number of fires reported each year in Minnesota, Michigan, and Wisconsin increased on an average more than 100 per cent from 1915 to 1924, the increase in reported area burned during this time averaged only a negligible amount, according to studies of the past history of forest fires conducted by the Lake States Forest Experiment Station. While this record appears to reflect seriously upon the users of the forests, it indicates a considerable improvement in the work of those who must suppress fires in this region.

In 1915 the total number of fires reported in the three States was 961; in 1924 the total was 3,307. The average number of fires for the first 5 years of this period was 1,187, and for the second 5 years, 2,547. In the main the increase in number has been steady from year to year, with twice as many fires reported in 1921 as in 1915, and again twice as many reported in 1923 as in 1920. The 1924 total is slightly under that of 1923, the highest year recorded.

The average area burned the first 5 years compared with that for the second 5 years shows strikingly the decrease in damage per fire. The average fire area for the first half of the decade is 582 acres; that for the second half only 283 acres. In dollars and cents of fire loss, the decrease is from \$635 to \$475, and this in spite of the fact that present-day estimates of loss are higher than they were 10 years ago. These figures, declares the Forest Service, United States Department of Agriculture, indicate clearly that while progress has been made in fire suppression there is a crying need for better fire prevention, especially as only 1 per cent of fires in the whole ten years were due to lightning, and only 2 per cent were deliberately set.

### Louisiana Purchases State Park

The State Legislature of Louisiana has recently appropriated \$10,000 for the first State park to be established in Louisiana. It will comprise 110 acres and will be located partly in the town of St. Martinville. This is the first step to preserve the giant live oaks that are being rapidly destroyed.



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**Policy Determined For Road Development in Superior National Forest**

As a result of the conference held early in September at St. Paul, Minnesota, the Secretary of Agriculture has determined the policy to be followed in building roads and promoting wilderness recreation in the Superior National Forest, Minnesota. The conference took the form of a hearing at which advocates of the wilderness idea protested against road development on this great wild area.

Believing that at least 1,000 square miles containing the best of the lakes and canoe routes should be kept free of roads, Secretary Jardine approved the building of only such roads as will enable the Forest Service to give the National Forest adequate fire protection when used in connection with water routes and logging railroads. The project approved for the present includes extension of the public road eastward from Ely seven miles to the Fernberg Lookout. This will be particularly useful in attacking spring fires before the waterway, which is difficult at best, is opened for the season. It will not interfere with the wilderness character of the region about the Kawishiwi Lakes and waterways.

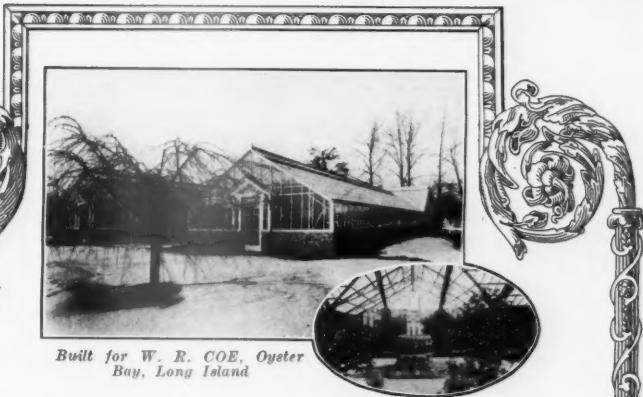
**Last Women Lookouts in Forest Service**

There now remain in the great California National Forests only two women lookouts. They are Daisy Parker, stationed atop Sardine Peak in the Tahoe National Forest and Hallie M. Daggett on Eddy Gulch Mountain in the Klamath.

Acting as lookout in the Forest Service is not one of the most sociable of human occupations. The stations are remote on peaks or hilltops often far from railroads, shops, theaters, churches and schools. The lookout's job is one of "watchful waiting," peering through a telescope about and below for the signs of a forest fire. Women have been so successful in many of the new kinds of work opened to them in the last quarter-century that often they become threatening competitors with men in the same field. Not so in the Forest Service. Men may be glad to know that here at least is one kind of work in which the number of women is decreasing.

According to the U. S. Forest Service, there will be no more women lookouts added, because "the experience of the Forest Service has been that their employment is not practicable, owing to the isolation of the stations and the character of the work. It is necessary in addition to other duties that the lookout keep the telephone-line in constant repair, keep the trail cleared out, repair station buildings or make required improvements, and extinguish fires in their vicinity. Where women serve, much of the work falls upon the forest-rangers. For the last three or four years it has been the policy of the Forest Service to replace women lookouts with men, as fast as the women resign."

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<i>Pseudotsuga</i> (Douglas Fir)		<i>P. Excelsa</i> (Norway Spruce)	1.45
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### Making Money Out of Forestry

Three typical instances of profits from forestry practice have come in to the office of The American Forestry Association within the past month.

T. E. Thresher from near Norfolk, Virginia, writes of experience with a tract of loblolly or oldfield pine. He says, "I have taken out systematically all that were crowding each year since, and have also taken out all the crooked and worthless trees of every variety, and have protected the whole from fire. The pine has made wonderful growth, and is a real pleasure to look at. I have gotten enough out of the piling from trees that were crowding to pay carrying charges on the whole, and I think I can continue to do so."

We quote a letter from Vermont to the New England Homestead written by C. A. Badger, of East Montpelier, who says, "We are clearing up a piece of woodland this winter that I bought and when we get through, we shall have about 1000 nice second growth sugar maples from 6 to 12 inches in diameter left, and cut enough undesirable trees to pay for the lot. And if nothing happens these maples will be worth one dollar each in ten years. If I had one million dollars to invest I would invest it all in Vermont forest land at the price it can be bought for at the present time."

Not to be outdistanced by private forestry, word comes from the Pike National Forest of the sale of more than 700 trees from the thinnings of yellow pine and Douglas fir plantations started in 1912. An investigation of the amount of this thinning that could be done, showed 340 acres—mostly 1912 planting, although some dated back to 1906—where 100,000 trees could be removed with advantage to the remaining trees and profit to the Government. It is estimated that yellow pine sites in this region will not support more than 300 trees to the acre and Douglas fir about 500 without stagnation. Since the planting was done during that period with a spacing of about 6 by 6, whereas 8 by 8 spacing is now followed, from 150 to 500 trees, or an average of 250 per acre, should be removed. This would bring in a return, at 25 cents a tree, of \$62.50 an acre, or enough to offset the original planting cost of about four acres.

Accordingly, notices have been sent to many commercial nurserymen advising them of the trees for sale. Arrangements have been made with local concerns to dig the trees so that it will be unnecessary for nurserymen to send employees from distant places to supervise the digging and packing. There was an immediate response from many places and orders so far have been placed for 15,000 trees.



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**STUMPAGE PRICES.**—Lowest rates considered; \$5.25 per M for western yellow pine and Jeffrey pine, \$6.35 per M for sugar pine, \$5.00 per M for white fir, red fir, incense cedar, and for any material below the specifications for sawlogs, to be cut and removed at the option of the purchaser.

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The right to reject any and all bids is reserved.

Before bids are submitted, full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, San Francisco, California, or the Forest Supervisor, Sonora, California.

## Exterminating Caterpillars by Wireless

THE tent caterpillar is one of the worst enemy of our trees and shrubbery. Nothing is more unsightly than the webs of these pests and the stripped trees where they have been at work. Coming each year with the first leaves on the wild cherry and apple trees, the small silken tents of the caterpillar appear, gradually growing bigger and making the trees and

announcements a few weeks in advance the campaign started. Three weeks was the time limit set for the records to be made by the various groups and individuals entered and each week Mr. Burgess reported the progress at the weekly meeting of the league from Station WBZ. The result at the close of the time limit was the destruction by fire of nearly 400,000



BROADCASTING THE WARNING

shrubbery more unsightly. Yet there is little need for any community to have its roadsides so disfigured for each has within its grasp the means of wiping out these pests.

Proof of this statement is best substantiated by the experiment successfully conducted by Thornton W. Burgess through the medium of the WBZ Radio Nature League of which he is director. This league meets for a half-hour broadcast period weekly. Intensely interested in preserving roadside foliage, Mr. Burgess offered three awards to the league membership—one to the school destroying the greatest number of egg masses of the tent caterpillar; one to the scout troop making the best record and one to the individual making the highest score. With preliminary

egg clusters of the tent caterpillar, each cluster averaging not less than 200 eggs. The total campaign enrollment for the three weeks period showed from 30,000 to 35,000 actively engaged in fighting and destroying the potential pest. The children collected the eggs, brought them to their school where they were counted by the teacher and burned. One small school in East Granby, Connecticut, having but 24 pupils, exterminated 20,687 egg clusters. This is an average of 862 for each member of the school. Albert Pironi, a boy scout in Troop No. 1 of Ayer, Massachusetts, collected 7,556, this high figure winning for him the individual prize. Many other lads collected the egg masses, the total of which came very close to Pironi.

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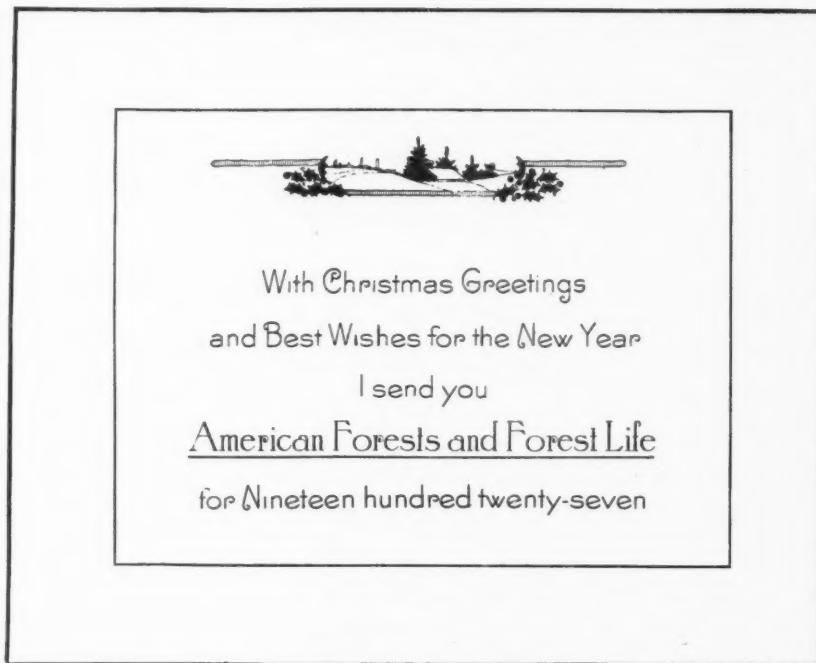
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